BIODIVERSITY VERSUS NATURE:

VALUES IN CONFLICT

by

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ABSTRACT

Biodiversity versus Nature: Values in Conflict

In just a few decades, biodiversity conservation has become the dominant goal within natural area management. The rapid rise to predominance of this concept is widely regarded as a triumph for conservation. However, biodiversity values form only a subset of the many values broadly associated with nature. As the concept of biodiversity becomes more deeply entrenched within management structures, official activities will gradually remake the natural landscape in a way that reflects this subset of values. It is argued that this is a problem, and one that is generated not just by the dominance of the concept *per se*, but by a general lack of awareness of the full range of values associated with nature, or, more precisely, our actual motivations for valuing nature in the variety of ways that we do.

To explore this problem, and to generate some insight into possible solutions, the justifications typically presented for conserving biodiversity are examined. It is demonstrated that the ubiquitous claim that biodiversity is essential for the maintenance of ecosystem services is undermined by the dependence of most services on species associations that are highly substitutable or resilient to environmental change. By contrast, the strongest argument for conserving 'diversity' is that it has intellectual interest,

particularly for those who dedicate themselves to the biological sciences.

The values more broadly associated with nature are then examined, initially through review of such terms as 'naturalness', 'wildness', and the 'autonomy of nature'. The most prevalent explanation for the value of such qualities is that wild nature is evocative of some larger-than-human context. However, the view that nature has value 'for itself' – that is, inherent value – is subsequently shown to have a number of other sources. These are described as 'motives', of which four are identified:

(1) The experience of connection with nonhuman life;

(2) Scientific interest in nature;

(3) Respect for the larger context; and

(4) Dissatisfaction with the abstractions of modern society.

The first constitutes the dominant motive for animal welfare groups, while the second provides the dominant motive for biologists whose primary concern is the conservation of biodiversity. Motive three is particularly associated with 'spiritual' values, while motive four provides a convincing explanation for the value of naturalness and wildness, being qualities diminished by intentional human activity.

The potential for conflict and convergence between these motives and the subset of values associated with biodiversity are then

explored. This exercise is assisted by two conflict case studies: the debates between animal welfare activists and conservationists, and between proponents of ecological restoration and wilderness preservation. The latter serves to highlight the need for wildness values to be accorded a greater level of legal protection, as there is the risk that such values will be eroded by conservation programs oriented primarily toward safeguarding biodiversity. Greater awareness of the motives underlying the value of wild nature will assist in achieving this end.

ACKNOWLEDGEMENTS

Wild nature may well be an essential counterpoint to the abstractions of modern life. Yet, in the construction of this dissertation, the role of counterpoint has been provided by Rachael. She is the antidote to my introspective academic inclinations, assisted by Joseph, whose limited grasp of spoken English has not dulled his capacity to distract us both from higher pursuits.

Despite their hands-off approach, the influence of my supervisors has been considerable. Pete Hay has reinforced a dedication to the organic accretion of clutter, and a creative disdain for bureaucracy. Without his support, this doctorate would have not been. In Aidan Davison I found the perfect guide to academic culture. His humble views on the communication of ideas and captivating enthusiasm for journal impact factors and publication benchmarks have been formative.

Many others warrant mention, but to these four people go my particular thanks.

CONTENTS

Chapter One

INTRODUCTION

Suppose one could make out a good case for conserving the variety of nature on all three grounds – because it is a right relation between man and living things, because it gives opportunities for richer experience, and because it tends to promote ecological stability...

Charles Elton (1958)[1]

Is the only reasonable conservation objective to which we can aspire in the twenty-first century the construction of so-called protected areas that are nothing more than scientifically designed and intensively managed arks to salvage as much biodiversity as possible from the deluge of humanity? Most current literature on international conservation proceeds from the assumption that the answer is "yes" and therefore seeks scientific and technical solutions developed by conservation biologists, park planners, and public-land managers. There is almost no formal discussion in international conservation circles today of how we might resist the disappearance of the wild both within and outside of so-called protected areas around the world.

Edward Whitesell (2001)[2]

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[1] Charles S. Elton, *The Ecology of Invasions by Plants and Animals*, (London: Methuen, 1958), p. 145.

[2] Edward A. Whitesell, "Mapping the Wild," in *The World and the Wild*, ed. David Rothenberg and Marta Ulvaeus (Tucson: University of Arizona Press, 2001), p. 191.

I. THE PROBLEM

Biodiversity is shorthand for biological diversity. In just a few decades, it has become the dominant concept within natural area management. Assessments of biodiversity are used to evaluate the success of management strategies in existing reserves, and provide a crucial justification for creating new reserves. This is not just the case in one or two western countries where, as a result of unusual circumstances, the concept has managed to capture the collective imagination. Rather it is a global phenomenon, being a feature of all United Nations agreements relating to environmental management since the *Convention on Biological Diversity* was introduced in 1992, and most environmental policy documents produced by multinational corporations and internationally-focused environmental non-government organisations. Similarly, all western countries, and a great proportion of other countries, have accorded biodiversity a crucial role within legislative frameworks for environmental management and protection. Such enthusiasm is reflected in the attitude of the general public – at least among the environmentally-aware middle classes – which has also come to acknowledge the value of conserving 'biodiversity'. This trend follows the widespread conversion of practitioners of the biological sciences, with the prevalence of the term 'biodiversity' within scientific databases having escalated since the first articles to include it were published in the mid-1980s.

That the meteoric rise of this concept might be something other than a triumph for conservationists is rarely acknowledged. Increased concern for biodiversity on the part of global organisations, governments, private

enterprise, and the average citizen, is invariably perceived as a good thing by those who value 'nature' not just for its instrumental uses but simply because it exists. The suggestion that a greater management focus on biodiversity might constitute a 'problem' could well be dismissed as a contrived quibble, hyped-up and embroidered by a struggling researcher hoping to generate the contention necessary to launch his academic career. However, this is far from the case.

The concept of biodiversity is not, in itself, a problem. It is, rather, a potential source, and manifestation, of problems. These arise because biodiversity values – the values particularly associated with biodiversity – form only a subset of the many values that are broadly associated with nature. It is fallacious to suggest that declining species diversity renders a natural area devoid of natural values. For most people untrained in the biological sciences diminished biodiversity is unlikely to be noticed. Up to a point, the aesthetic, spiritual, recreational, educational, and psychological values of natural areas will be little affected by the loss of obscure species. Yet, the dominance of the concept of biodiversity ensures that biodiversity values are prioritised by default, with the remaining values protected only to the extent that they are consistent with biodiversity values. With popular support for the conservation of biodiversity grounded to a large extent in concern for the more general values of nature it can be argued that the success of the concept of biodiversity has a destabilising effect on efforts to protect nature. Two possible outcomes present themselves:

(1) Support for the conservation of biodiversity is undermined by popular dissatisfaction with the detrimental effect of

conservation policies on the values of nature that are inconsistent with biodiversity values.

(2) The concept of biodiversity becomes more deeply entrenched within the governing structures of society, leading to transformation of the natural landscape such that it reflects values consistent with the conservation of biodiversity.

Given the current emphasis on biodiversity it seems more likely that what will be lost in the process are the values of nature that are incompatible with the values of biodiversity. This seems particularly tragic when it is recognised that, for many people, value is attributed to biodiversity under the mistaken assumption that the term is simply a technical way of referring to 'nature'. By this path, a significant proportion of the values popularly attributed to biodiversity might well be wrongly assigned. This is an important issue, and one that is generated not just by the dominance of biodiversity values, but by a general lack of awareness of the full range of values associated with nature, or, more precisely, our actual motivations for valuing nature in the variety of ways that we do. Recognition of this risk, at least within the academic literature, appears to be limited to a handful of authors from the United States and the United Kingdom. Their specific concerns will be elaborated during the course of the dissertation.

II. THESIS STRUCTURE

To fully explore this problem, and generate some insight into possible solutions, this dissertation is structured around the following question:

"Is management undertaken to conserve biodiversity compatible with protecting the values associated with nature?"

In working towards this objective, the thesis is divided into four parts and twelve chapters:

PART A What is biodiversity?

Chapter Two – Background information on the concept of biodiversity, including a basic definition, clarification of its meaning, and an overview of the degree to which it has been incorporated within international and national systems for managing natural areas.

PART B What values are protected by the conservation of biodiversity?

Chapter Three – Consideration of the value of biodiversity for sustaining ecosystem services.

Chapter Four – Consideration of the commercial value of biodiversity, and of problems associated with justifying conservation on the basis of instrumental values.

Chapter Five – Consideration of the non-instrumental values of biodiversity, being its intrinsic value, and values arising from an intellectual interest in biodiversity.

PART C What are the values associated with nature?

Chapter Six – Examines the definition and value of 'naturalness', which has a significant bearing on the value of nature.

Chapter Seven – Examines the meta-ethical issue of what category of value should be investigated. The most appropriate category is deemed to consist of values that are both non-instrumental and non-intrinsic. These are termed 'inherent values'.

Chapter Eight – Proposes an axiology of inherent value, consisting of four 'motives' for valuing nature 'for itself'.

Chapter Nine – Describes the fourth motive.

PART D How do the values associated with biodiversity and nature conflict?

Chapter Ten – Considers the conflict between advocates of biodiversity conservation and animal welfare groups.

Chapter Eleven – Considers the conflict between advocates of biodiversity conservation and 'preservationists'.

Chapter Twelve – Considers the ethical prospects opened up by the axiology of inherent value.

Chapter Thirteen – Conclusion.

III. METHODOLOGY

In addressing the above question this dissertation traverses a variety of methodological terrain. While this much at least can be gleaned from the structural overview, a breakdown of the methods employed will be useful.

Chapter three involves examination of the ecological arguments deployed in support of the notion that the conservation of biodiversity is essential for the maintenance of ecosystem services. In consequence the literature examined is largely scientific, or consists of commentary provided by scientists. Most of chapter six, and parts of chapter two, involve clarification of the definitions of various terms, again through critical review of the available literature. Chapters ten and eleven are largely dedicated to case-studies that serve to demonstrate the values and motives uncovered in earlier chapters. Chapter twelve considers the insights generated by the dissertation so far, and applies them to the management of natural areas. In a methodological sense, these various approaches are relatively unproblematic, provided the tasks are undertaken in as even-handed a manner as possible. However, more needs to be said regarding the philosophical approach taken in the discussion of values, and the motivations underlying values, which dominates chapters four and five, the end of chapter six, and all of chapters seven, eight and nine.

Most of the literature referred to in the text that follows is sourced from environmental philosophers, although occasional contributions from sociologists and psychologists are also included. The benefits of a philosophical approach to environmental questions are described by Christopher Belshaw as being "first a clarification of the many issues

involved and secondly the detailed pursuit of a range of moral and value questions that thought about the environment is bound to raise."[3] He also points out that, when attempting to persuade people to adopt particular values over others, a philosophical approach is unavoidable.[4] However, this dissertation is not intended to be a treatise on why we *should* conserve nature, but rather an investigation into *why we already do so.* This is not dissimilar to the project undertaken recently by Allan Greenbaum, who asked:

> How do people come to value nature 'for its own sake'? Specifically, how do ecologists, conservation biologists, naturalists and others who seek to defend species, ecosystems, 'ecologically significant' natural areas, or (more abstractly) wildness, biodiversity or ecological integrity, come to hold these entities or conditions to be intrinsically valuable?[5]

Such an approach is in keeping with the advice of Eugene Hargrove that, rather than attempting to *revolutionise* how people think about the world, environmental philosophers should direct their energy to *describing* how people think about the world.[6] It follows that the axiology developed

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[3] Christopher Belshaw, *Environmental Philosophy: Reason, Nature and Human Concern*, (Chesham: Acumen, 2001), p. 9.

[4] *Ibid.*, p. 14.

[5] Allan Greenbaum, "Nature Connoisseurship," *Environmental Values* 14 (2005): 389.

[6] Eugene C. Hargrove, "Environmental Ethics Without a Metaphysics," in *Land, Value, Community: Callicott and Environmental Philosophy*, ed. Wayne Ouderkirk and Jim Hill (Albany: State University of New York Press, 2002), p. 143.

partway through the dissertation should not be thought of as 'an ethic' in the same way that consequentialism or deep ecology are. It is more a device for highlighting some of the inadequacies of existing ethical approaches, including the identification of issues that environmental ethics needs to consider if it is to increase its relevance for the understanding of environmental attitudes and resolution of environmental conflicts. In this regard, Belshaw's comment – that "a philosophical approach is unavoidable" – remains relevant, insofar as the case is made below for greater recognition of certain values that have been somewhat neglected.

Perhaps the most potent criticism that can be directed towards a theoretical philosophical approach is the likelihood of it being essentially irrelevant for the actual, physical, conservation of nature. Some comfort is provided here by Bernard Williams, who notes that such approaches:

> can indeed run the risk of seeming frivolous or indecently abstract when questions of practical urgency are at the front of political attention. Moreover, it is not simply a matter of urgent political decisions; some of the broader philosophical considerations are not immediately shaped to *any* practical decision, and it is a mistake to make it seem as though they were. They are, rather, reflective or explanatory considerations, which may help us to understand our feelings on these questions, rather than telling us how to answer them.[7]

[7] Bernard Williams, *Making Sense of Humanity and Other Philosophical Papers 1982-1993*, (Cambridge: Cambridge University Press, 1995), p. 233.

It is the critical evaluation of existing practices that might arise from such reflection that elicits the following response from David Takacs, a passage that is just as apt here as it was in the opening chapter of his book, *The Idea of Biodiversity: Philosophies of Paradise*:

> To 'deconstruct' an idea is not difficult, and I attempt to do that here with biodiversity. Yet how does one deconstruct constructively? How to make it so that others do not misuse my analyses to obstruct those biologists attempting to stem the destruction of biological diversity? How does one bring advocacy to scholarship while remaining far enough removed from the events one chronicles to make some stab at objectivity? How can one feel about the natural world as strongly as I do... and not believe that those feelings approach the truth in some sense? How can I balance my healthy skepticism about conservation biologists' proselytizing on behalf of biodiversity against my fervent hope that they succeed? In reporting the tensions at whose nexus biodiversity is located, I hope to resolve some of them in myself.[8]

William Cronon, in his introduction to the controversial *Uncommon Ground: Rethinking the Human Place in Nature*, extends the value of such 'constructive deconstruction' beyond the generation of insights that might be regarded as closer to 'the truth'. He makes the persuasive claim that the environment movement as a whole will benefit:

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[8] David Takacs, *The Idea of Biodiversity: Philosophies of Paradise*, (Baltimore: The Johns Hopkins University Press, 1996), p. 8.

> We believe that any movement that merits the most passionate support of its followers – as environmentalism surely does – also deserves their most thoughtful and soul-searching criticism. Troubling as such criticism can sometimes seem, its goal in the end must be to deepen and enrich our understanding of the problems we struggle to solve, by helping us see the unexamined, sometimes contradictory, assumptions at the core of our own beliefs – assumptions that can distract or defeat us if we embrace or act on them unthinkingly.[9]

It is with these weighty ambitions in mind that the following investigation of the 'problem' of biodiversity takes place. It is time to delve into the background material presented in chapter two, after a brief comment on the meaning of the key terms 'conservation' and 'preservation'.

IV. TERMINOLOGY

'Nature conservation' has traditionally described the protection of nature for human benefit, whereas 'nature preservation' was once the term reserved for the protection of nature on grounds other than the assessment of utility. Since the days of Gifford Pinchot and John Muir, conservationists and preservationists have disagreed over these divergent principles. However, in recent years there has been a shift away from these

[9] William Cronon, "Introduction: In Search of Nature," in *Uncommon Ground: Rethinking the Human Place in Nature*, paperback edition, ed. William Cronon (New York: W.W. Norton, 1996), p. 26.

established meanings,[10] encouraged by the tendency of scientists to refer to all efforts to protect nature as 'conservation', even when those efforts are justified by non-instrumental arguments. This inconsistency is encapsulated in the sub-disciplinary title 'conservation biology', the practitioners of which are largely unified by a belief in the intrinsic value of biodiversity (discussed in chapter two). Similarly, 'preservation' has come to refer to the protection of natural areas by way of a 'hands-off' management approach. These new terminological habits will be respected in the text below.

The term 'environmentalist' will be employed to refer to people who are likely to attribute some form of non-instrumental value to nature, and consider that, in some situations, these values take precedence over the exploitation of nature for human benefit.

As to the meaning of 'nature', much has been written on this difficult term and its social construction.[11] There is little reference to this literature in the text that follows, although a similar approach is adopted insofar as the dissertation amounts to a study of the social construction of the *value* of nature. The differences between the two are subtle, and in many respects they comprise the same project, for what determines our understanding of something other than its value? Value is determined by the intersection of the personal, the social, and the physical reality of nature, each of which

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[10] William M. Adams, "Rationalization and Conservation: Ecology and the Management of Nature in the United Kingdom," *Transactions of the Institute of British Geographers* 22 (1997): 278-79.

[11] A review of this literature is provided by David Demeritt, "What is the 'Social Construction of Nature'? A Typology and Sympathetic Critique," *Progress in Human Geography* 26 (2002): 767-90.

will contribute to the thesis under examination as it unfolds. To avoid the possibility of confusion, 'nature' will almost invariably be used to describe that which is not human, rather than the essential character of things, which can also be described by this term.

PART A

WHAT IS BIODIVERSITY?

Chapter Two

THE DOMINANCE OF BIODIVERSITY

"Biological diversity" means the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

Convention on Biological Diversity (1992)

If the biota, in the course of aeons, has built something we like but do not understand, then who but a fool would discard seemingly useless parts? To keep every cog and wheel is the first precaution of intelligent tinkering.

Aldo Leopold (1953)[1]

I. INTRODUCTION

Outlined below is the history of the term 'biodiversity', and examples of its dominance within environmental management systems at the international and national levels. This is followed by discussion of the meaning of biodiversity, with particular focus on the existence of two different

[1] Aldo Leopold, *A Sand County Almanac With Other Essays on Conservation from Round River*, (New York: Oxford University Press, 1966), p. 177.

interpretations, and the value of the concept of biodiversity, as distinct from the value of biodiversity itself. The chapter concludes with a review of authors who have suggested that the dominance of biodiversity, by which is meant the dominance of the concept, is not entirely in the best interests of those who value nature.

II. THE ASCENDANCY OF BIODIVERSITY

The most commonly cited definition of biodiversity, reproduced above, is that contained within the United Nations *Convention on Biological Diversity*. This definition refers to three levels of diversity – genes, species, and ecosystems – although, in theory, any criteria for distinguishing living organisms could be considered. The term's wide scope has generated considerable discourse on its meaning, reviewed in 2004 by Julia Koricheva and Helena Siipi.[2] Most of the concerns raised about the definitional shortcomings of biodiversity are of little relevance to the topic at hand, except for the ease with which it can be extended beyond a particular focus on diversity to refer to nonhuman life in general. This issue is discussed in detail later in this chapter.

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[2] Julia Koricheva and Helena Siipi, "The Phenomenon of Biodiversity," in *Philosophy and Biodiversity*, ed. Markku Oksanen and Juhani Pietarinen (Cambridge: Cambridge University Press, 2004), pp. 29-38.

The first public appearance of the term was at a conference – the Forum on BioDiversity – held in 1986 in Washington, DC.[3] On its acceptance by the scientific community, David Takacs notes that "in 1988, *biodiversity* did not appear as a keyword in *Biological Abstracts*, and *biological diversity* appeared once. In 1993, *biodiversity* appeared seventy-two times, and *biological diversity* nineteen times."[4] Updating these statistics to 2005, and using the *Web of Science* database rather than *Biological Abstracts*, it appears that the meteoric rise of biodiversity has continued. Between 1981 and 1990, 'biological diversity' appears between one and 11 times per year.[5] The first occurrence of 'biodiversity' is in 1987, appearing in two articles. By 1990 this figure is up to 19, and increases steadily to 1,158 in 2000, and 2,729 in 2005. In comparison, 'biological diversity' increases in occurrence from 35 in 1991, to 76 in 2000, and 121 in 2005. This is depicted in figure one below.

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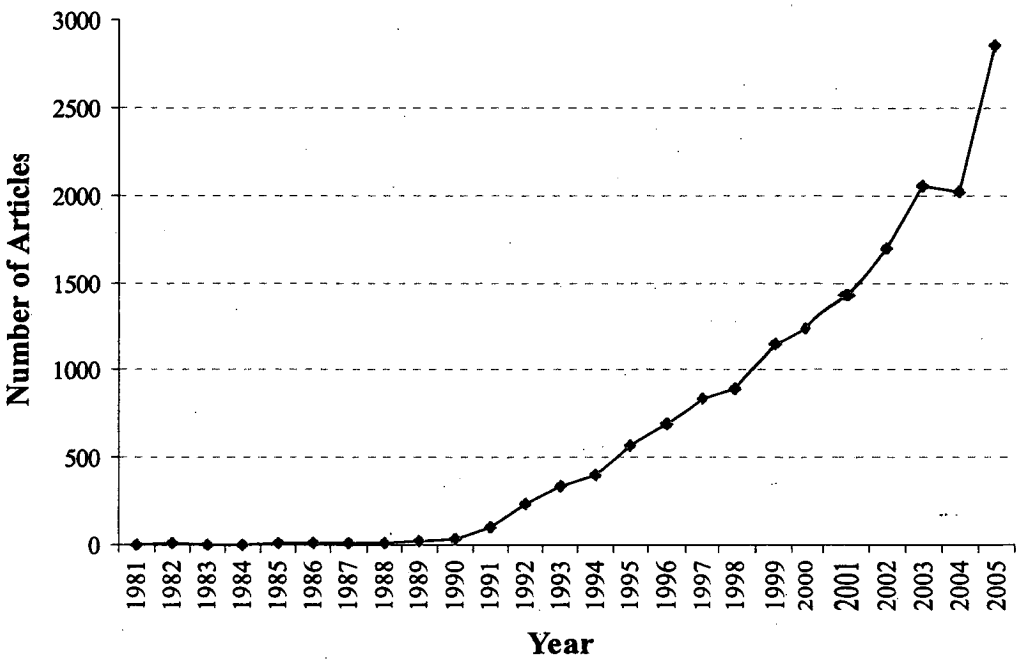
[3] Edward O. Wilson (ed.), *Biodiversity*, (Washington, DC: National Academy Press, 1988)

[4] David Takacs, *The Idea of Biodiversity: Philosophies of Paradise*, (Baltimore: The Johns Hopkins University Press, 1996), p. 39.

[5] Figures provided for 'biological diversity' include the small number of articles – five per year on average between 1991 and 2005 – that contain the term 'biotic diversity'.

Figure One: The appearance of 'biodiversity', 'biological diversity', and 'biotic diversity' in the *Web of Science* database.



It is the attribution of value to biodiversity that elevates its status above that of the average unit of measurement. The term was invented in the mid-1980s by conservation biologists for the express purpose of communicating to the non-scientific community the escalating rate of species extinctions and the loss of value that this entailed.[6] That biodiversity encompasses all levels of diversity, rather than just species richness, reflects the increasing recognition that protecting species from extinction requires attention to genetic diversity within species populations and the maintenance of

[6] Takacs, *The Idea of Biodiversity*, p. 37.

ecosystem processes upon which the species depends. This holistic, long-term perspective has been termed the 'ecosystem approach',[7] the need for which is emphasised by a particular shortcoming of endangered species legislation, being that by the time a species is listed for protection, its population may be so diminished, and its habitat so disrupted, as to make extinction inevitable.[8]

Conservation biology attained recognition as an independent discipline after a conference on the subject was held in California in 1978.[9] The number of journals dedicated to conservation biology has proliferated since this time, and includes *Biological Conservation* (since 1969), *Conservation Biology* (since 1987), *Biodiversity and Conservation* (since 1992), *Pacific Conservation Biology* (since 1993), and *Conservation Genetics* (since 2000). Such is the dominance of biodiversity that it is possible for all conservation journals with a focus on biology or ecology to be reconceived as biodiversity journals.

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[7] Timothy M. Hennessey and Dennis L. Soden, "Ecosystem Management: The Governance Approach," in *Handbook of Global Environmental Policy and Administration*, ed. Dennis L. Soden and Brent S. Steel (New York: Marcel Dekker, 1999), pp. 29-48.

[8] See Daniel J. Rohlf, "Six Biological Reasons Why the Endangered Species Act Doesn't Work – and What to Do About It," in *Environmental Policy and Biodiversity*, ed. R. Edward Grumbine (Washington, DC: Island Press, 1994), pp. 184-94.

[9] George W. Cox, *Conservation Biology: Concepts and Applications*, second edition, (Dubuque: Wm. C. Brown Publishers, 1997), pp. 2-6; Malcolm L. Hunter, *Fundamentals of Conservation Biology*, second edition, (Malden, USA: Blackwell Science, 2002), pp. 14-16.

It should be noted that not all conservation biologists immediately jumped onto the biodiversity bandwagon. For example, the index of *Conservation Biology in Theory and Practice*, by Graeme Caughley and Anne Gunn, published in 1996, includes no reference to 'diversity', 'biological diversity', or 'biodiversity'. The focus of the text is instead directed to the particular management issues surrounding endangered species. While there is only the barest mention of the *Convention on Biological Diversity*, many pages are dedicated to the *Convention on International Trade in Endangered Species of Wild Fauna and Flora* and the 'red books' produced by the World Conservation Union (IUCN) containing listings of rare and endangered species.[10] Gunn has since indicated that their neglect of the concept of biodiversity reflected the belief that 'species' were (and are still) the primary focus of most biodiversity conservation efforts.[11]

In the years since the emergence of conservation biology and the neologism 'biodiversity', immense energy has been expended on surveys to document unknown species and the historic and current biodiversity of particular areas, on experiments investigating the role of diversity in population dynamics and ecosystem function, and on programs to maintain, restore, and promote biodiversity. This scientific interest and activity has stimulated, and in turn has been driven by, the demands of

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[10] Graeme Caughley and Anne Gunn, *Conservation Biology in Theory and Practice*, (Cambridge: Blackwell Science, 1996), pp. 379-388.

[11] Email from Anne Gunn to Ben Ridder, 17 February 2006.

environmental activists, governments, and the general public, who seek action to prevent harm to natural systems, remedy past damage, and conserve particular species and ecosystems. Such demands manifest in a plethora of organisations, agreements, policies, and nature reserves whose purpose relates to the conservation of biodiversity. Of particular significance in this process has been the role of the United Nations.

III. ENVIRONMENTAL POLICY

Most international activity on biodiversity is coordinated and funded by the United Nations (UN), particularly through the UN Environment Program (UNEP) and the UN Educational, Scientific and Cultural Organisation (UNESCO). The most relevant agreement administered by the UN is the *Convention on Biological Diversity* (CBD), which emerged from the Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992. Under the convention, participating nations essentially agree to do all they reasonably can to protect biodiversity. At the 2002 UNCED, held in Johannesburg, the convention was strengthened by the commitment of participating nations to establish an international network of national and regional protected areas by 2010. At present, 168 countries are signatories to the CBD.[12] Related to the convention, and also proposed at the Rio conference, is *Local Agenda 21*, which is administered by the UN

[12] See the website for the *Convention on Biological Diversity* (http://www.biodiv.org).

Commission on Sustainable Development. Signatories to this agreement acknowledge, among other things, that to be beneficial in the long-term, development must not diminish biodiversity.[13]

The CBD and the concept of biodiversity have given rise to a process of conversion among existing UN conventions, such as the *Ramsar Convention on Wetlands*, which came into existence in 1971. Although this predates widespread interest in biological diversity it has since been reinterpreted such that biodiversity is now a central priority:

> The official name of the treaty – *The Convention on Wetlands of International Importance especially as Waterfowl Habitat* – reflects its original emphasis on the conservation and wise use of wetlands primarily to provide habitat for waterbirds. Over the years, however, the Convention has broadened its scope to cover **all aspects** of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities.[14]

This conversion has also occurred with the *Man and the Biosphere Programme* (MAB), which was officially launched in 1970 and is

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[13] See the website of the UN Division for Sustainable Development (http://www.un.org/esa/sustdev/documents/agenda21).

[14] See the website for the Ramsar Convention (http://www.ramsar.org/about/about_infopack_2e.htm).

administered by UNESCO. In 1995 the International Coordinating Council of MAB reviewed the existing objectives in light of the Rio conference, and particularly the CBD. This gave rise to 'the Seville Strategy', which places far greater emphasis on the role of MAB in conserving biodiversity.[15]

Other high-level UN sponsored agreements of significance for the protection of biodiversity, although not explicitly justified in these terms, include the international ban on commercial whaling administered since 1946 by the International Whaling Commission, the *Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora* (CITES – 1973), the *Bonn Convention on the Conservation of Migrating Species of Wild Animals* (1979), the *Convention to Combat Desertification* (1994), and the UN Forum on Forests (2000).[16] Other significant projects sponsored by the UN include the World Conservation Monitoring Centre (WCMC), whose work is specifically targeted towards gathering information on global biodiversity, and the Millennium Ecosystem Assessment.[17]

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[15] See the website for the MAB (http://www.unesco.org/mab/doc/Strategy.pdf).

[16] See the websites for the International Whaling Commission (http://www.iwcoffice.org), CITES (http://www.cites.org), the Bonn Convention (http://www.cms.int), the *Convention to Combat Desertification* (http://www.unccd.int), and the Forum on Forests (http://www.un.org/esa/forests).

[17] See the websites of the WCMC (http://www.unep-wcmc.org) and the Millennium Ecosystem Assessment (http://www.millenniumassessment.org).

There are also many non-government organisations involved in similar activities. The IUCN, for example, was instrumental in drafting the CBA,[18] and has been producing the 'red books' since 1962.[19] Through the World Commission on Protected Areas (WCPA), the IUCN is particularly influential in the field of protected area management,[20] and significantly defines 'protected area' as "an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means."[21]

For the European Union, which currently consists of 25 member states, the first significant nature conservation agreement was the Bern Convention on the Conservation of European Wildlife and Natural Habitats, which came into effect in 1982. In the 2004 *Declaration on the Role of the Bern Convention in the Conservation of Biological Diversity*, the standing committee of the convention provides some indication of the extent to which the concept of biodiversity has become the primary focus

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[18] Fiona McConnell, *The Biodiversity Convention: A Negotiating History*, (London: Kluwer Law International, 1996), pp. 26-27.

[19] See the biography for Sir Peter Scott available on the website of the Wildfowl & Wetlands Trust (http://www.wwt.org.uk/about/Peter%20Scott.pdf).

[20] See the website of the WCPA (http://www.iucn.org/themes/wcpa).

[21] International Union for the Conservation of Nature and Natural Resources, *Guidelines for Protected Area Management Categories*, (Gland: IUCN, 1994), p. 7.

of their efforts.[22] The conservation of biodiversity was itself written into legislation in the 1992 European Union *Directive on the Conservation of Natural Habitats and Wild Fauna and Flora* (the 'Habitats Directive').[23] It was under this Directive that the Natura 2000 network of protected areas was established.[24] In addition, the European Union approved a 'Biodiversity Strategy' in 1998, which made provision for the preparation of 'biodiversity action plans' by member countries.[25]

At the national level, there has been a widespread shift, particularly in affluent countries, to incorporate the concept of biodiversity within legislation and systems governing the management of natural areas and, to a lesser extent, other activities that impact on nonhuman life. This is apparent from the national reports that are submitted to the secretariat of

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[22] Standing Committee of the Convention on the Conservation of European Wildlife and Natural Habitats, *Strasbourg Declaration on the Role of the Bern Convention in the Conservation of Biological Diversity.* Adopted 30 November 2004. Available from the website of the Council of Europe (http://www.coe.int/t/e/Cultural_Co-operation/Environment).

[23] Council of the European Committees, *Directive on the Conservation of Natural Habitats and Wild Fauna and Flora*, Adopted 21 May 1992. Available from the website of the European Commission (http://ec.europa.eu/environment/nature).

[24] See the website summarising the activities and legislation of the European Union (http://europa.eu/scadplus/leg/en/lvb/l28076.htm).

[25] See the website of the European Commission (http://ec.europa.eu/environment/docum/9842sm.htm).

the CBD outlining the measures taken to satisfy the requirements of the Convention.[26]

Biodiversity also features within the mission statements of many large corporations, such as BHP Billiton,[27] Coca-Cola,[28] DuPont,[29] ExxonMobil,[30] and General Motors.[31]

IV. CLARIFYING THE MEANING OF BIODIVERSITY

Of particular relevance for consideration of the value of biodiversity is the confusing use of this term in contexts that are one or more steps removed from the quality of 'diversity'. An explanation is found in the *Biodiversity Synthesis* produced by the Millennium Ecosystem Assessment (MEA):

> the value of the diversity of genes, species, or ecosystems per se is often confused with the value of a particular component of that

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[26] See the website of the CBD (http://www.biodiv.org/reports/default.aspx).

[27] See the website of BHP Billiton (http://sustainability.bhpbilliton.com/2006/environment/caseStudies/biodiversity)

[28] See the website of Coca-Cola Enterprises (http://www.cokecce.com/srclib/corporate_responsibility/environment14.html).

[29] See the website of DuPont Biotechnology (http://www2.dupont.com/Biotechnology/en_US/difference/principles.htm).

[30] See the website of ExxonMobil (http://exxonmobil.com/Corporate/Citizenship/biodiversity.asp).

[31] See the website of General Motors (http://www.gm.com/company/gmability/sustainability/reports/05/600_environment).

> diversity. Species diversity in and of itself, for example, is valuable because the presence of a variety of species helps to increase the capability of an ecosystem to be resilient in the face of a changing environment. At the same time, an individual component of that diversity, such as a particular food plant species, may be valuable as a biological resource. The consequences of changes in biodiversity for people can stem both from a change in the diversity per se and a change in a particular component of biodiversity. Each of these aspects of biodiversity deserves its own attention from decision-makers, and each often requires its own (albeit connected) management goals and policies.[32]

Koricheva and Siipi describe this as a distinction between the scientific concept and the popular concept of biodiversity,[33] although given that scientists also have a tendency to conflate the two when arguing for conservation, a more accurate way of understanding the distinction is that it is between 'biological diversity' and 'nonhuman life'. Whereas the focus of the former is on 'diversity', the latter can be used to refer to a single organism or species, the diversity of species, or all species in total. Given that the formal definition of 'biodiversity' relates specifically to 'diversity', it should be emphasized that although the 'nonhuman life' sense of

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[32] Millennium Ecosystem Assessment, *Ecosystems and Human Well-being: Biodiversity Synthesis*, (Washington, DC: World Resources Institute, 2005), p. 2.

[33] Koricheva and Siipi, "The Phenomenon of Biodiversity," pp. 42-43.

biodiversity is often convenient, it is also incorrect and misleading. Conflation of the two is widespread and has a range of policy implications, which arise because management oriented toward the conservation of 'diversity' can be quite different to management oriented toward protecting certain valued species. To avoid confusion, Philipp Mayer recommends that "specific features of biodiversity should be distinguished, for reasons of clarity, from biodiversity per se... a study titled 'The biodiversity of arthropods' is much vaguer than one titled 'The species richness of arthropods – a feature of biodiversity.'"[34] Although he prefers the term 'feature', similar terms include 'facet', 'element', and 'component' (of biodiversity).

As suggested by the MEA, this distinction has particular significance when considering the value of biodiversity, for the values associated with biological diversity form a tiny subset of the values more broadly associated with nonhuman life. However, the MEA does not emphasise the extent to which conflation of these two meanings can mislead. For example, the textbook *Living in the Environment* includes the sub-heading "why should we care about biodiversity?", beneath which is presented a list of values associated with particular species and natural areas, including

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[34] Philipp Mayer, "Biodiversity – The Appreciation of Different Thought Styles and Values Helps to Clarify the Term," *Restoration Ecology* 14 (2006): 109.

ecosystem services, recreation opportunities, aesthetics, and so on.[35] This list makes it clear that the author is referring to the values of particular components of biodiversity, rather than biological diversity itself. If he had confined himself to the more formal usage, retaining a focus on 'diversity', then the list of values would have been much reduced. For example, only a few recreation opportunities could be listed, such as photographing specimens of many different species of bird. A similar mistake is apparent in a study of "public perceptions of biodiversity" in Canada, which actually questioned people on the value of forests and natural areas.[36] Another example is the enormous (750-page) report commissioned by UNEP, entitled *Cultural and Spiritual Values of Biodiversity*, throughout which is discussed the spiritual value of particular trees, certain plants with healing properties, and crops essential to indigenous diets.[37] In some respects it makes sense to refer to these values as being associated with a 'diversity' of species, rather than particular species, as the report does contain a 'diversity' of examples. Yet in each particular case described in the report it is not usually a diversity of species that is valued, but certain useful or

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[35] G. Tyler Miller, *Living in the Environment: Principles, Connections, and Solutions*, thirteenth edition, (Pacific Grove: Brooks/Cole-Thomson Learning, 2004), pp. 568-570.

[36] Loren Vanderlinden and John Eyles, "Public Perceptions of Biodiversity: Models and a Case Study," in *Biodiversity in Canada: Ecology, Ideas, and Action*, ed. Stephen Bocking (Peterborough: Broadview Press, 2000), pp. 237-270.

[37] Darrell A. Posey (ed.), *Cultural and Spiritual Values of Biodiversity*, (Nairobi: United Nations Environment Program, 1999)

significant species. It is the compilers of the report, engaging in a process of generalisation, who are associating the values with the aggregate rather than the specific.

The definitional ambiguity is most apparent when arguments are being presented for the conservation of biodiversity. Gretchen Daily and ten co-authors, for example, highlight a variety of human benefits associated with the use of particular species, including the harvesting of fish from aquatic ecosystems, the use of animals and animal products found in grassland ecosystems, timber, fibre, and foodstuffs from forest ecosystems, and so on. The authors state that biodiversity is the source of these ecosystem goods, yet in most of their examples it is not the diversity of species that provides the goods, but particular species. Despite the contradiction, these arguments are presented in support of conserving the full diversity of species.[38]

The ambiguity surrounding the meaning of biodiversity is a significant contributing factor to the problem at the heart of this dissertation. That biodiversity values form only a subset of the values generally associated with nonhuman life is a notion that will be viewed with scepticism by those who have come to believe that biodiversity values *encompass* all of these values.

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[38] Gretchen C. Daily, *et al.*, "Ecosystem Services: Benefits Supplied to Human Societies by Natural Ecosystems," *Issues in Ecology* 2 (1997): 1-16.

V. THE VALUE OF THE CONCEPT

Aside from the values associated with biodiversity itself, which are discussed through the course of the next three chapters, the *concept* of biodiversity also has considerable value. One of the most important grounds for this value is its scientific basis. The concept of biodiversity is associated with an ecological approach, which in turn provides an empirical grounding for the management of natural areas. Management strategies that do not take account of ecological interdependencies, species population dynamics, habitat requirements, and so on, are less likely to be successful in the task of conserving valued aspects of nature.[39]

Because biodiversity can be quantified (although not without difficulty[40]) it becomes possible to rank areas on this basis, which is especially useful for bureaucratic processes such as determining priorities and assigning resources. Thus, Timo Peuhkuri and Pekka Jokinen tie the escalating interest in biodiversity to the "globalization and scientization" of environmental problems.[41] Similarly, in his description of an influential

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[39] Takacs, *The Idea of Biodiversity*, pp. 52-59.

[40] See Sahotra Sarkar, "Defining 'Biodiversity'; Assessing Biodiversity," *The Monist* 85 (2002): 131-55.

[41] Timo Peuhkuri and Pekka Jokinen, "The Role of Knowledge and Spatial Contexts in Biodiversity Policies: A Sociological Perspective," *Biodiversity and Conservation* 8 (1999): 135. See also David John Frank, "Science, Nature, and the Globalization of the Environment, 1879-1990," *Social Forces* 76 (1997): 409-35.

report produced in 1993 on biodiversity in the United Kingdom, Adams observes that:

> In some ways the most remarkable feature of this latest turn of debate about conservation concerns not the details of the action proposed, but the way in which that action is conceived of. *Biodiversity Challenge* is a set-piece of applied business management thinking. In the new language of biodiversity, conservation efforts must be targeted on critical priorities, and locked into a tight programme of activities designed to achieve a specified and agreed output in a predicted time and within a known budget. These ideas match the contemporary rhetoric of public life, and quite fundamental shifts in the way people think – not only about the proper work of government, but also about themselves and world about them.[42]

It has been suggested that the scientific nature of the concept might prove problematic for conservationists. Désirée McGraw notes that the "species-specific and site-specific treaties, which pre-dated the CBD, made it easier for the public to embrace 'charismatic animals', such as pandas and seal pups, and to explore 'exotic sites' such as the rainforests of Borneo and

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[42] William M. Adams, *Future Nature: A Vision for Conservation*, revised edition, (London: Earthscan Publications, 2003), p. 50.

Brazil."[43] Yet, 'biodiversity' does have a high public profile, and, arguably, would not feature so prominently within legislation and organisation mission statements if it did not.

As discussed in the previous section, in the shift from a scientific to a managerial concept, 'biodiversity' has undergone a process of simplification that has not necessarily disadvantaged conservationists. An inherent conservation bias is also apparent in the way the concept generalises value from specific nonhuman entities to, potentially, everything. Biodiversity describes a quality of the natural world to which all its aspects, including humans, contribute. As each organism, species or ecosystem is *potentially* dependent upon other organisms, species, and ecosystems, assigning value to any individual thing implies assigning an associated value to all the things upon which it depends.[44] Even individual organisms can be assigned value for contributing to the genetic diversity of their community and species. This reflects the application of the precautionary principle, which is discussed in the following two chapters.

The willingness of conservationists to exaggerate the dangers of exploiting nature in order to strengthen the grounds for its protection is a frequent theme of 'anti-environmentalist' authors like Bjørn Lomborg,

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[43] Désirée M. McGraw, "The Story of the Biodiversity Convention: From Negotiation to Implementation," in *Governing Global Biodiversity: The Evolution and Implementation of the Convention on Biological Diversity*, ed. Philippe G. Le Prestre (Aldershot: Ashgate, 2002), p. 26.

[44] Bryan G. Norton, *Why Preserve Natural Variety?*, (Princeton: Princeton University Press, 1987), pp. 62-66.

Gregg Easterbrook, and Ronald Bailey.[45] However, there also exists a related discourse among conservationists whereby criticism is directed towards those who promote arguments for conserving biodiversity that do not truly reflect their own personal reasons for doing so. This tendency has led some to suggest that the honesty of conservation scientists has been compromised by the desire to build support for conservation goals.[46] In August 2000, debate among scientists investigating relationships between biodiversity and ecosystem functioning spilled onto the pages of *Science* after a letter was published in the *Bulletin of the Ecological Society of America* (ESA), signed by eight prominent researchers, accusing the ESA of unscientific bias.[47] This led to a meeting of the aggrieved parties at a

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[45] Ronald Bailey, *Eco-Scam: The False Prophets of Ecological Apocalypse*, (New York: St. Martins Press, 1993); Gregg Easterbrook, *A Moment on the Earth: The Coming Age of Environmental Optimism*, (Harmondsworth: Penguin, 1995); Bjørn Lomborg, *The Skeptical Environmentalist: Measuring the Real State of the World*, (Cambridge: Cambridge University Press, 2001).

[46] See, for example, K.S. Shrader-Frechette and Earl D. McCoy, "How the Tail Wags the Dog: How Value Judgments Determine Ecological Science," *Environmental Values* 3 (1994): 107-20; Takacs, *The Idea of Biodiversity*, pp. 253-254, 266-270; Dwight Barry and Max Oelschlaeger, "A Science for Survival: Values and Conservation Biology," *Conservation Biology* 10 (1996): 905-911; Paul Roebuck and Paul Phifer, "The Persistence of Positivism in Conservation Biology," *Conservation Biology* 13 (1999): 444-46.

[47] David A. Wardle, *et al.*, "Biodiversity and Ecosystem Function: An Issue in Ecology," *Bulletin of the Ecological Society of America* 81 (2000): 235-239; Jocelyn Kaiser, "Rift Over Biodiversity Divides Ecologists," *Science* 289 (2000): 1282-83.

specially organized conference in December 2000 and the eventual publication of a consensus paper in 2005.[48]

As discussed further in chapter four, the 'personal reasons' for valuing biodiversity are difficult to extricate from the non-instrumental values associated with nature and nonhuman life more generally. As noted by William Cronon:

> an apparently more 'scientific' concept than wilderness, biological diversity in fact invokes many of the same sacred values, which is why organizations like the Nature Conservancy have been quick to employ it as an alternative to the seemingly fuzzier and more problematic concept of wilderness.[49]

Many people might support the rational arguments presented for biodiversity conservation, such as the maintenance of ecosystem services or the commercial benefits of as-yet unexploited genetic material, but their true reasons for this support are less utilitarian. Their stated belief in the value of biodiversity might instead reflect a more general concern for

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[48] Jennifer B. Hughes and Owen L. Petchey, "Merging Perspective on Biodiversity and Ecosystem Functioning," *Trends in Ecology and Evolution* 16 (2001): 222-23; D.U. Hooper, *et al.*, "Effects of Biodiversity on Ecosystem Functioning: A Consensus of Current Knowledge," *Ecological Monographs* 75 (2005): 3-35.

[49] William Cronon, "The Trouble With Wilderness," in *Uncommon Ground: Rethinking the Human Place in Nature*, paperback edition, ed. William Cronon (New York: W.W. Norton, 1996), p. 81.

nature. These value-priorities encourage and reinforce the conflation of the two different interpretations of 'biodiversity', which, in turn, bolsters the case for biodiversity conservation.

Because of its numerous benefits for government bureaucrats, natural area managers, and conservation activists, the concept of biodiversity has gained considerable momentum since its entry into the public arena, akin to 'efficiency' for economic administrators, or 'journal impact' for academic administrators. As in these other spheres, the domination of particular management concepts can have unforeseen, and unwelcome, consequences. A brief review of those authors who have drawn attention to the potential problems arising from the dominance of 'biodiversity' is presented below.

VI. RECOGNITION OF THE PROBLEM

The 'problem' under investigation is that management oriented to conserving global biodiversity does not necessarily protect the full range of values associated with nature and nonhuman life. Recognition of this problem generally appears in tandem with expressions of concern for the loss of 'wildness' or 'wilderness values'. Such concerns appear to be most prevalent in the United States, having been discussed by authors including David Cole, Jack Turner and Edward Whitesell. Turner has been the most forceful of this group, with the last chapter of his collection of essays, *The*

Abstract Wild, largely dedicated to a lament for the fate of wildness under scientific management by conservation biologists.[50] Whitesell, whose output on this subject appears to consist of just one chapter in the edited volume, *The World and the Wild*, employs a similar tone to Turner.[51] Cole's observations are more measured, being confined to the pages of journals relating to conservation science and wilderness management. This is perhaps a reflection of his position as a scientist with the Aldo Leopold Wilderness Research Institute, which is funded by the United States Forest Service. Of his work, most pertinent to the subject at hand is a 2005 paper published in the *International Journal of Wilderness*. Here he raises the concern that the symbolic values of wilderness are potentially undermined by the scientifically-justified activities taken to protect ecological values.[52]

In the United Kingdom the dominance of the concept of biodiversity in environmental management is also the occasional subject of concern. For example, there have been several brief articles in the journal of the British Association of Nature Conservationists that have drawn attention to this

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[50] Jack Turner, *The Abstract Wild*, (Tucson: The University of Arizona Press, 1996), pp. 107-25.

[51] Edward A. Whitesell, "Mapping the Wild," in *The World and the Wild*, ed. David Rothenberg and Marta Ulvaeus (Tucson: University of Arizona Press, 2001), pp. 185-197.

[52] David N. Cole, "Symbolic Values: The Overlooked Values That Make Wilderness Unique," *International Journal of Wilderness* 11 (2005): 10, 23-27.

issue.[53] Perhaps the highest profile author of recent time to express such concerns has been Peter Taylor, whose book, *Beyond Conservation: A Wildland Strategy*, is the most comprehensive account of 'rewilding' in Europe and the UK. He suggests that a focus on conserving habitat suitable for rare species will soak up funds that might otherwise be made available for returning agricultural land to nature. Most rare species in the UK survive only under conditions that require ongoing active management to maintain, and because of the impetus behind the UK Biodiversity Action Plan, there is less money available for 'rewilding'.[54] Other British authors who have drawn attention to the potential for conflict between wildness and the focus on conserving biodiversity include William Adams and Steven Trudgill.[55] A more focused piece is presented by Kate Rawles. Although she recognises the danger posed to 'naturalness' by biodiversity-oriented management, her primary interest is the callous attitude toward the

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[53] See, for example, Paul Evans, "Biodiversity: Nature For Nerds?" *ECOS* 17 (1996): 7-12; James Fenton, "Scotland: Reviving the Wild," *ECOS* 20 (2000): 67-69; Peter Rhind, "Give Nature a Chance," *ECOS* 25 (2004): 85-91.

[54] Peter Taylor, *Beyond Conservation: A Wildland Strategy*, (London: Earthscan, 2005), p. 217.

[55] William M. Adams, "When Nature Won't Stay Still: Conservation, Equilibrium and Control," in *Decolonizing Nature: Strategies for Conservation in a Post-Colonial Era*, eds. William M. Adam and Martin Mulligan (London: Earthscan Publications, 2003), pp. 220-46; Adams, *Future Nature*, revised edition; Steven Trudgill, *The Terrestrial Biosphere: Environmental Change, Ecosystem Science, Attitudes and Values*, (Harlow: Pearson Education, 2001); Steven Trudgill, "Psychobiogeography: Meanings of Nature and Motivations for a Democratized Conservation Ethic," *Journal of Biogeography* 28 (2001): 677-98.

lives of sentient animals encouraged by attention to the survival of species and ecosystems.[56]

In Australia, this issue has apparently aroused no interest. In addition to the lack of scholarly discussion on the matter, there appears to be little interest from the general public. In 2005, for example, the Department of Conservation and Land Management in Western Australia conducted a public consultation program for a proposed biodiversity conservation strategy for that state. Of the 173 submissions, none mentioned the natural values that might possibly be threatened by policies oriented towards biodiversity.[57]

VII. ALTERNATIVE CONCEPTS

It should be acknowledged that biodiversity is only one among a wide range of concepts employed to assess and manage natural areas. Not only are there other ecological concepts, such as ecological integrity and ecosystem health, but there exist broader management concepts, such as social and economic sustainability, in addition to traditional considerations like legality, public and political opinion, and cost. The position taken here

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[56] Kate Rawles, "Biological Diversity and Conservation Policy," in *Philosophy and Biodiversity*, ed. Markku Oksanen and Juhani Pietarinen (Cambridge: Cambridge University Press, 2004), pp. 199-216.

[57] Department of Conservation and Land Management, *Summary and Analysis of Public Submissions on the Discussion Paper Towards a Biodiversity Conservation Strategy for Western Australia*, (Perth: Department of Conservation and Land Management, 2005).

is that, in the management of natural areas, biodiversity is the dominant ecological concept. Also that, on account of its central role within relevant international agreements and national legislation, biodiversity concerns can usurp even such politically important factors as popularity and cost.

The dominance of the concept of biodiversity among other ecological concepts is demonstrated by its prominence within treaties, laws, policies and management plans at every scale from the United Nations to local government authorities. It is also apparent that biodiversity is an indispensable component of other concepts employed to manage natural areas, including sustainable development, ecological health, and ecological integrity.

The need to conserve biodiversity is a key aspect of sustainable development. Both concepts figured prominently at the 1992 UNCED in Rio de Janeiro. Robert Costanza, *et al.*, note that:

> Biologically, sustainability means avoiding extinction, and living to survive and reproduce. Economically, it means avoiding major disruptions and collapses, hedging against instabilities and discontinuities. At its most basic level, sustainability always concerns temporality and, in particular, longevity.[58]

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[58] Robert Costanza, Michael Mageau, Bryan Norton and Bernard C. Patten, "What is Sustainability?" in *Ecosystem Health*, ed. David Rapport, Robert Costanza, Paul R. Epstein, Connie Gaudet and Richard Levins (Malden: Blackwell Science, 1998), p. 234.

Included within the *Rio Declaration on Environment and Development* was reference to the need to "conserve, protect and restore the health and integrity of the Earth's ecosystem".[59] Although the architects of the declaration were referring to 'health' and 'integrity' in a general sense, this terminology coincides with two management concepts that might be seen as alternatives to 'biodiversity'. David Rapport defines ecosystem health as follows:

> Its essence is to marry knowledge of how environmental systems behave (that is, impacts of stress pressures on ecosystems) with knowledge of what is desirable and acceptable. This question necessitates considering the widest possible implications of change – change in human health, economic opportunity, cultural integrity, and aesthetics – in terms of societal values... As an integrative science, ecosystem health goes far beyond the boundaries of stress ecology, a field that concerns itself with the strictly biophysical aspects of the problem. It explicitly takes into account the wider territory of socioeconomic, human health, legal, and policy aspects.[60]

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[59] *Rio Declaration on Environment and Development* (Principle 7). Available from the website of the UN Division for Sustainable Development (http://www.un.org/esa/sustdev/documents/agenda21).

[60] David Rapport, "Need for a New Paradigm," in *Ecosystem Health*, ed. Rapport, *et al.*, pp. 3-17.

J. Baird Callicott suggests a 'working definition' of ecosystem health to be "a condition of normality in the linked processes and functions that compose *ecosystems*."[61] Laura Westra notes that ecosystem health is a "condition that may apply even to nonpristine or somewhat degraded ecosystems, provided they function successfully as they presently are."[62] Ecosystem health has much in common with sustainability, in so far as a 'healthy' ecosystem must be able to sustain itself; to "maintain its metabolic activity level as well as its internal structure and organization... [and] prove resilient to outside stresses over a time and space frame relevant to that system".[63] With 'organization' to a large extent described by biodiversity, and, as is claimed by many ecologists, with the resilience of ecosystem functioning largely determined by biodiversity,[64] maintaining biodiversity is therefore considered necessary for the maintenance of ecosystem health. As discussed in the next chapter, it is likely that the conservation of biodiversity is not essential for the maintenance of many ecosystem services, in which case it is possible that an ecosystem could be

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[61] J. Baird Callicott, "The Value of Ecosystem Health," *Environmental Values* 4 (1995): 357.

[62] Laura Westra, "Ecosystem Integrity and Sustainability: The Foundational Value of the Wild," in *Perspectives on Ecological Integrity*, ed. Laura Westra and John Lemons (Dordrecht: Kluwer Academic Publishers, 1995), p. 32.

[63] Robert Costanza, Michael Mageau, Bryan Norton and Bernard C. Patten, "Predictors of Ecosystem Health," in *Ecosystem Health*, ed. Rapport, *et al.*, p. 241.

[64] Hooper, *et al.*, "Effects of Biodiversity on Ecosystem Functioning," pp. 3-35.

considered healthy, from a societal rather than a biological perspective, despite a decline in biodiversity.

Biological integrity is defined by Paul Angermeier and James Karr as "the capability of supporting and maintaining a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of natural habitat of the region."[65] Laura Westra emphasises the significance of the conservation of biodiversity to integrity, which "is achieved when the system's optimum capacity for the greatest possible ongoing developmental options within its time/location remains undiminished." In addition to minimising 'anthropogenic stress', this is "fostered by the greatest possible biodiversity."[66] Given the uncertainty inherent in distinguishing natural and anthropogenic stress purely on the basis of ecological effect, as discussed in chapter six, this leaves integrity to be in many respects dependent on conserving biodiversity.

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[65] Paul L. Angermeier and James R. Karr, "Biological Integrity Versus Biological Diversity as Policy Directives," *BioScience* 44 (1994): 692.

[66] Westra, "Ecosystem Integrity and Sustainability," p. 33.

VIII. CONCLUSION

Since the term was coined in the mid-1980s, 'biodiversity' has come to be the dominant ecological concept within UN conventions and environmental legislation. This has been largely due to the influence of conservation biologists who recognised a need to adopt an ecosystem approach in order to manage vulnerable species populations. The most significant instrument by which this influence has been translated into action at the national level is the UN *Convention on Biological Diversity*. However, despite its prominence, 'biodiversity' is often taken to refer to nonhuman life in a more general sense. This enables many values more broadly associated with nature to be misleadingly attributed to biodiversity. Only a limited number of authors in the United State and the United Kingdom have suggested that the dominance of the concept of biodiversity might constitute a 'problem', mostly because it encourages a focus on the management of nature, a focus that potentially undermines the quality of 'wildness'.

PART B

WHAT VALUES ARE PROTECTED BY THE CONSERVATION OF BIODIVERSITY?

Chapter Three

THE VALUE OF BIODIVERSITY: ECOSYSTEM SERVICES

Natural ecosystems support human life through an array of absolutely essential, free public services. Once we look closely at the nature of those services and the systems that provide them, and at the roles that individual species and populations play within ecosystems, then it should become clear why any enemy of the Snail Darter is an enemy of yours and ours, too.

Paul and Anne Ehrlich (1981)[1]

I. INTRODUCTION

In considering whether a focus on the conservation of biodiversity is compatible with protecting the values associated with nature we first need to determine what are the values specifically protected by such a focus. Examination of these values will occupy chapters four and five in addition to the current chapter, as follows:

Chapter Three: Consideration of the value of biodiversity for maintaining ecosystem services essential to human well-being.

[1] Paul R. Ehrlich and Anne H. Ehrlich, *Extinction: The Causes and Consequences of the Disappearance of Species*, (London: Victor Gollancz, 1982), p. 77.

Chapter Four: Consideration of the commercial value of biodiversity, and problems associated with justifying conservation purely on the basis of instrumental values.

Chapter Five: Consideration of the non-instrumental values of biodiversity, including its intrinsic value, and values arising from an intellectual interest in biodiversity. This is followed by discussion of the value of biodiversity as a surrogate for values more generally associated with nonhuman life and nature.

One significant value that has been omitted from this investigation is the cultural value of biodiversity. This is because such value will either be encompassed by one of the other values that has been included, is more readily associated with nonhuman life and nature rather than biodiversity in particular, or is sufficiently personal and individualistic that it cannot be considered a general case.

II. THE ECOSYSTEM SERVICES ARGUMENT

The argument that the maintenance of biological diversity is essential for the sustainable provision of ecosystem services (ES) is perhaps the most powerful justification for the conservation of biodiversity. The ES argument is grounded in science, and compatible with impersonal, economic assessments of value in a way that aesthetic and moral arguments are not. It is promoted within international treaties, national legislation, government reports, academic textbooks, popular environmental books, and by scientific organisations, grassroots

conservation groups, state-funded and commercial media, and so on. From presidents to the Pope, concern has been expressed that conservation of biodiversity is necessary for the future material well-being of humanity.[2] However, an important observation that undermines the universal applicability of the ES argument is that most services are provided not by whole ecosystems, but by any group of species that fulfils certain basic functional criteria and which is capable of flourishing on a given site. This chapter articulates and explores the implications of this rarely acknowledged counterargument.

The most authoritative description of the meaning of 'ecosystem services' is given by the Millennium Ecosystem Assessment (MEA). Under this definition ES include both the material and non-material benefits from both natural and human-modified ecosystems. ES are divided into four categories: provisioning services, regulating services, cultural services, and supporting services.[3] Framed in terms of the MEA definition, biodiversity is a regulating and supporting ecosystem service that is itself essential to the provision of all ES. It is the latter half of this statement that will be examined below; that is, the argument that biodiversity is essential

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[2] See the speech given by the President of France, Jacques Chirac, on 24 January 2005, at the UNESCO conference "Biodiversity: Science and Governance", which is available from the website of the French embassy in the United Kingdom (http://www.ambafrance-uk.org). See also the apostolic exhortation "Ecclesia in America" (paragraph 25), given by Pope John Paul II in Mexico City, 22 January 1999, which is available from the Vatican website (http://www.vatican.va/holy_father/john_paul_ii/apost_exhortations).

[3] Millennium Ecosystem Assessment, *Ecosystems and Human Well-being: A Framework for Assessment*, (Washington, DC: World Resources Institute, 2003), pp. 55-60.

for all ES, rather than the argument that biodiversity is itself an ecosystem service. It should also be noted that because of the controversy surrounding the identification of relationships between biodiversity and ecosystem functioning, discussed in the previous chapter, the consensus paper published by Hooper *et al.* in 2005 will be used in preference to other sources where appropriate.[4] Note also that in the text below 'biodiversity' will generally refer to 'species richness' because it is the link between species extinction and the provision of ES that has generated the most debate.

One of the foundation texts for the argument that biodiversity conservation is necessary to ensure the provision of ES is *Extinction: The Causes and Consequences of the Disappearance of Species*, written by Paul and Anne Ehrlich, and first published in 1981. The essential structure of their argument is as follows:

1a. Ecosystems provide ES.

1b. Ecosystems may collapse if species become extinct.

2. Therefore ES may collapse if species become extinct.

3a. If ES collapse they will have to be provided artifically, which in many cases will be expensive and inadequate.

3b. Our ability to predict the effect of species extinction on ecosystem functioning and provision of ES is not infallible.

4. Therefore all species must be conserved to avert catastrophe (precautionary principle).

5. Given the high rate of species extinction we must act now.

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[4] D.U. Hooper, *et al.*, "Effects of Biodiversity on Ecosystem Functioning: A Consensus of Current Knowledge," *Ecological Monographs* 75 (2005): 3-35.

This argument was dramatically illustrated with the metaphor of rivets being progressively 'popped' from the wing of an aeroplane. Each rivet removed represented the extinction of a species. The plane represented individual ecosystems, or, in its broadest sense, 'Spaceship Earth':

> The natural ecological systems of Earth, which supply these vital services, are analogous to the parts of an airplane that make it a suitable vehicle for human beings. But ecosystems are much more complex than wings or engines. Ecosystems, like well-made airplanes, tend to have redundant subsystems and other 'design' features that permit them to continue functioning after absorbing a certain amount of abuse. A dozen rivets, or a dozen species, might never be missed. On the other hand, a thirteenth rivet popped from a wing flap, or the extinction of a key species involved in the cycling of nitrogen, could lead to serious accident.[5]

Perhaps the most contentious aspect of the biodiversity-ES argument is the precautionary principle (line 4 above). ES are associated with particular ecosystem functions. Because some ecosystem functions are strongly dependent on the activities of particular species, and because these dependencies are often not well understood, it is claimed that a prudent, precautionary approach requires protection of the full diversity of species to ensure long-term provision of ES and human prosperity. In making this argument, the application of the precautionary principle is grounded in the

[5] Ehrlich and Ehrlich, *Extinction*, pp. xii-xiii.

perception of risk, which is itself strongly influenced by value orientation.[6] Much of the debate surrounding the ES argument for biodiversity conservation hinges on perception of the effect that species extinctions *might have* on the provision of ES. It seems reasonable to suggest that people who place a high value on biodiversity are more sensitive to potential threats to species survival, and hence more likely to adopt a precautionary approach favoring biodiversity in any given situation. The usefulness of the precautionary principle is that it permits these values to be taken into account. As stated by Ronnie Harding and Elizabeth Fisher, "we need to acknowledge the precautionary principle for what it is – a *principle* which is open to value-based interpretation."[7]

One significant challenge to the precautionary principle in this context is posed by non-equilibrium ecology, which holds that ecosystem functioning is largely the result of opportunistic interactions between fluctuating and unstable species populations.[8] Those leaning toward the non-equilibrium perspective will tend to down play the precautionary principle as they perceive ecosystem change to be ubiquitous rather than necessarily catastrophic, which leads to a lower perception of risk that species loss, on

[6] Henk van den Belt and Bart Gremmen, "Between Precautionary Principle and 'Sound Science': Distributing the Burdens of Proof," *Journal of Agricultural and Environmental Ethics* 15 (2002): 103-22.

[7] Ronnie Harding and Elizabeth Fisher, "Introducing the Precautionary Principle," in *Perspectives on the Precautionary Principle*, ed. Ronnie Harding and Elizabeth Fisher (Leichhardt: The Federation Press, 1999), p. 20.

[8] See, for example, Daniel B. Botkin, *Discordant Harmonies: A New Ecology for the Twenty-first Century*, (New York: Oxford University Press, 1990), pp. 25-49; Mutsunori Tokeshi, *Species and Coexistence: Ecological and Evolutionary Perspectives*, (Oxford: Blackwell Science, 1999), pp. 347-60; Robert V. O'Neill, "Is it Time to Bury the Ecosystem Concept?" *Ecology* 82 (2001): 3275-84.

its own, will cause ecosystem collapse.[9] Below we discuss another challenge to the precautionary principle: the notion that many ES are not species-specific and will therefore continue to be provided despite declining biodiversity.

III. RESILIENT ECOSYSTEM SERVICES

Most ES are provided not by whole ecosystems but by functional groups of species that are either resilient to change, or easily substitutable. Consequently these services will continue to be provided despite rare species fluctuation or loss. The greatest threats to the provision of such services are impacts that so severely damage the ecosystem that even the most basic functions and dominant species are essentially destroyed, such as occurs when natural ecosystems are replaced by intensive agriculture or urban infrastructure.

ES can be divided into three categories reflecting their sensitivity to species loss. The first includes services not dependent on particular species. The second includes services dependent on species that are resilient to changes in species richness and environmental conditions. The third includes services that are dependent on species that are sensitive to changes in species richness and environmental conditions.

The first category consists of ES that are provided by functional groups of species that are easily substitutable. Provision of such services will be

[9] See, for example, Mark Sagoff, "Muddle or Muddle Through? Takings Jurisprudence Meets the Endangered Species Act," *William and Mary Law Review* 38 (1997): 825-993; Lawrence B. Slobodkin, "The Good, the Bad and the Reified," *Evolutionary Ecology Research* 3(2001): 1-13.

maintained as long as one or more of these 'groups' of species continues to flourish under the prevailing environmental conditions. Recognition of this category of ES within the literature is generally fleeting with little effort made to explore its implications.[10] Describing such services as 'ecosystem services' is misleading in so far as it implies dependence of the service on a particular ecosystem or species community.

For example, it is apparent that many ES are principally dependent on the presence of trees and undergrowth. These services include carbon sequestration, the supply of drinking water, salinity prevention, flood mitigation, and erosion control. The specific identity of tree species present is of far less importance than whether any tree species are present. One study noted a "developing realisation that, from the perspective of vegetation water flux at catchment scales, a tree is a tree is a tree and consideration of species becomes superfluous."[11] In most ecosystems capable of supporting large woody vegetation, the primary risk posed to these non-species specific ES is from destructive events that denude the area of vegetation and inhibit recolonisation. Some examples include volcanic explosion, open-cut mining, salination, urban development, or

[10] See, for example, Manuel Lerdau and Lawrence Slobodkin, "Trace Gas Emissions and Species-Dependent Ecosystem Services," *Trends in Ecology and Evolution* 17 (2002): 309; Norman Myers, "Environmental Services of Biodiversity," *Proceedings of the National Academy of Sciences USA* 93 (1996): 2767; Paul F. Steinberg, "Defining the Global Biodiversity Mandate: Implications for International Policy," *International Environmental Affairs* 10 (1998): 116; Peter Weesie and Jelte van Andel, *On Biodiversity and its Valuation*, The CDS Research Report Series, Centre of Development Studies, (Groningen: University of Groningen, 2003), p. 16.

[11] Derek Eamus, *et al.*, "Ecosystem Services: An Ecophysiological Examination," *Australian Journal of Botany* 53 (2005): 3.

overgrazing in marginal farmland resulting in desertification. While such events can have a great impact on local (and possibly global) biodiversity, diminished biodiversity does not, in itself, constitute a threat to non-species specific ES.

The second category includes ES that are dependent on functional groups of species that are themselves resilient to likely changes in species diversity and environmental conditions. This category includes those groups of species that exist in large numbers and upon which humans have long been dependent for survival and the generation of wealth. All of the species concerned are extremely successful in so far as they are resilient to change and reproduce easily. Sometimes their profligacy results from deliberate human management but often it derives from their superior capacity to out-compete other species. Such species are at risk of population decline, as occurred among whale species and the American chestnut tree, yet it is misleading to suggest that such catastrophic losses are primarily caused by declining biodiversity when in most cases human mismanagement is to blame.

It needs to be recognized that in presenting these categories the ecological relationships that exist between species have been described in a manner that greatly oversimplifies reality. 'Functional groups' of species have been described as though they are unchanging entities, but this will rarely be the case as the composition of such groups will vary both in time and space. Such simplification is justified on the grounds that, no matter the underlying complexity of the ecological interactions taking place, the ES described by these two categories remain resilient to change. There seems to be a tendency among conservationists for awareness of the former

to overwhelm recognition of the latter, which is understandable given the policy implications of acknowledging that the ES argument for conserving biodiversity is not universally valid.

Both of these categories of ES, which would encompass the vast majority of services, are dependent not on conserving biodiversity but on ensuring that the relevant ecosystems and species are allocated sufficient freedom from exploitation in order to thrive in the long term and to adequately provide the relevant services. Such freedom requires the reservation of minimum areas of habitat, maintenance of appropriate disturbance regimes, and enforcement of sustainable harvest quotas. When considering the restoration of resilient ES in an area that has suffered damage, it is apparent that the conservation of species richness is of minimal importance relative to halting destructive processes, ensuring there are sufficient species available for recolonisation, and undertaking remediation/restoration works that complement the natural recovery process. As indicated by the Society for Ecological Restoration (SER), such activities are more appropriately described as 'rehabilitation' rather than 'restoration'.[12]

The potential change in species distributions resulting from climate change adds another dimension to be considered. To maintain the provision of resilient ES in the face of global warming and other large-scale disruptions requires the protection not necessarily of all biodiversity, but of robust populations of species from a range of climatic zones that are the functional equivalent of those currently providing essential ES. This is in

[12] SER, *The SER International Primer on Ecological Restoration*, (Tuscon: Society for Ecological Restoration International, 2004), p. 12.

addition to backup populations of the service-providing species themselves. These observations suggest a shift in conservation focus from biodiversity towards what is termed 'environmental diversity'. Although understood primarily as a useful surrogate for determining relative biodiversity in areas where detailed surveys of species are not available,[13] environmental diversity itself emerges as an important target of conservation efforts.

So long as ES are presumed to be highly sensitive, any evidence of species interdependence or connections between biodiversity and ecosystem functioning may be used, with reference to the precautionary principle, to justify the conservation of all species in order to maintain the provision of ES. However, the strength of the precautionary principle is diminished in areas where all ES can be assigned to the first two categories. It is a far less taxing task to determine which ES are resilient than to prove beyond any doubt, for all scenarios of future environmental change, that a species is redundant with regard to ecosystem functioning. Whereas the latter requires the modeling of complex ecological relationships, the former can be determined through observation of how particular ES are affected by various ecological stresses within a particular bioregion. Different stresses will impact upon ES in different ways. Bushfire, for example, will give rise to higher rates of soil erosion until the post-fire recovery of vegetation is underway. Yet other services will be

[13] D.P. Faith, S. Ferrier and P.A. Walker, "The ED Strategy: How Species-Level Surrogates Indicate General Biodiversity Patterns Through an 'Environmental Diversity' Perspective," *Journal of Biogeography* 31 (2004): 1207-1217.

enhanced by fire, as the growth of certain plants is promoted, and hunting made easier by the clearing of scrub and resulting improvement in visibility.

It is apparent that if the rationale for conservation is limited to the provision of ES, it would make more sense for conservation efforts to be devoted primarily to protecting and managing each species population or ecosystem necessary for the sustainable provision of an identified ecosystem service.[14] The conservation of all species – of biodiversity – is required only in situations where valued ES are particularly sensitive to change.

IV. ECOSYSTEM SERVICES SENSITIVE TO CHANGE

The third category consists of ES dependent on functional groups of species whose fate is somewhat marginal due to such factors as natural rarity, inherent sensitivity to change, or excessive loss of habitat. Consider the wild species of bees in agricultural areas of California that assist in the pollination of watermelon, tomato and sunflower crops. Populations of wild bees are in decline because of increased expansion of agriculture into remnant natural habitat, forcing farmers to expend resources on maintaining their own bee hives.[15] General research on ecosystem

[14] See, for example, Gary W. Luck, Gretchen C. Daily and Paul R. Ehrlich, "Population Diversity and Ecosystem Services," *Trends in Ecology and Evolution* 18 (2003): 331-336; Claire Kremen, "Managing Ecosystem Services: What Do We Need to Know About Their Ecology?" *Ecology Letters* 8 (2005): 468-479.

[15] Kremen, "Managing Ecosystem Services?" pp. 476-77.

functioning suggests that increased biodiversity may increase ecosystem stability in response to changing environmental conditions.[16] However, it needs to be acknowledged that studies of the capacity of biodiversity to contribute to ecosystem stability in times of flux have also found that the stabilising effect levels off, or saturates, at less than 50 percent of total diversity.[17] In relation to the example of crop pollination, the more optimistic finding suggests that a management strategy oriented to the conservation of biodiversity might buffer the 'provision of pollination services' during periods of climate change or other environmental fluctuation, as currently subdominant bee species that might perform better under the changed environmental conditions will remain available, as will other species upon which the various bee species depend. Hooper *et al.* identify a number of relationships between biodiversity and ecosystem functioning, each of which could be sufficient to prevent a decline in species populations that would otherwise result in cessation of a valued ecosystem service.[18] Use of the precautionary principle and the conservation of biodiversity therefore seems appropriate in relation to ES classed as 'sensitive'.

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[16] Hooper, et. al., "Effects of Biodiversity on Ecosystem Functioning," pp. 15-21.

[17] M. Schwartz, *et al.*, "Linking Biodiversity to Ecosystem Function: Implications for Conservation Ecology," *Oecologia* 122 (2000): 297-305.

[18] Hooper, et. al., "Effects of Biodiversity on Ecosystem Functioning," pp. 15-21.

V. THE LOW RESILIENCE ASSUMPTION

Advocates for the conservation of biodiversity as the priority goal of environmental management tend not to acknowledge the distinction between resilient and sensitive ES. This 'low resilience assumption' gives rise to, and is reinforced by the almost ubiquitous claim within the conservation literature that ES depend on biodiversity. Such claims are notably present in the controversial *Issues in Ecology* paper on biodiversity and ecosystem functioning that sparked the controversy mentioned above.[19] This appears to reflect a general tendency among authors in this field.[20] Although such authors may not actually espouse the low resilience assumption, by presenting such claims in the absence of any clarification they suggest a willingness for the assumption to be perpetuated. This is apparent in the following passage from David Rapport:

> In most cases, declines in ecological services are permanent, and efforts to restore such services have met with meager results... In most cases... transformations of ecosystems under stress result in

[19] Shahid Naeem, *et al.*, "Biodiversity and Ecosystem Functioning: Maintaining Natural Life Support Processes," *Issues in Ecology* 4 (1999): 1-12.

[20] See, for example, A. Hector, J. Joshi, S.P. Lawler, E.M. Spehn and A. Wilby, "Conservation Implications of the Link Between Biodiversity and Ecosystem Functioning," *Oecologia* 129 (2001): 627; Sharon P. Lawler, Juan J. Armesto and Peter Kareiva, "How Relevant to Conservation are Studies Linking Biodiversity and Ecosystem Functioning," in *The Functional Consequences of Biodiversity: Empirical Progress and Theoretical Extensions*, ed. Ann P. Kinzig, Stephen W. Pacala and David Tilman (Princeton: Princeton University Press, 2002), pp. 312-13; K.G. Lyons, C.A. Brigham, B.H. Traut and M.W. Schwartz, "Rare Species and Ecosystem Functioning," *Conservation Biology* 19 (2005): 1020.

> irreversible damage, where even heroic efforts are unlikely to succeed in re-establishing ecosystem services.[21]

The reference provided by Rapport relates to desertification, implying that all 'transformations of ecosystems' are equivalent in severity to this most severe of processes.

That the low resilience assumption is largely false is apparent in the number of examples of species extinctions that have not brought about catastrophic ecosystem collapse and decline in ES, and in the generally limited ecosystem influence of species on the cusp of extinction. These points have been made by numerous authors, although given the absence of systematic attempts to verify propositions of this sort, the evidence assembled is generally anecdotal and we are forced to trust that such authors are both well-informed and relatively unbiased in their assessment of this issue. Fortunately a number of highly respected people are included among those who have expressed these views, not least being the prominent conservation biologist David Ehrenfeld. In 1978 he described the 'conservation dilemma', which "arises on the increasingly frequent occasions when we encounter a threatened part of Nature but can find no rational reason for keeping it."[22] He then observed:

> I agree... that the clearing of the Valley of the Ganges must have permanently altered the ecology of the Bay of Bengal in important

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[21] David Rapport, "Defining Ecosystem Health," in *Ecosystem Health*, ed. David Rapport, Robert Costanza, Paul R. Epstein, Connie Gaudet and Richard Levins (Malden: Blackwell Science, 1998), pp. 19-20.

[22] David Ehrenfeld, *The Arrogance of Humanism*, (Oxford: Oxford University Press, 1981), p. 177.

ways. But have there been permanent and significant 'resource' effects of the extinction, in the wild, of John Bartram's great discovery, the beautiful tree *Franklinia alatamaha*, which had almost vanished from the earth when Bartram first set eyes upon it? Or a thousand species of tiny beetles that we never knew existed before or after their probable extermination? Can we even be certain than the eastern forests of the United States suffer the loss of their passenger pigeons and chestnuts in some tangible way that affects their vitality or permanence, their value to us?[23]

Later, at the first conference on biodiversity, Ehrenfeld reflected that:

> The sad fact that few conservationists care to face is that many species, perhaps most, do not seem to have any conventional value at all, even hidden conventional value. True, we cannot be sure which particular species fall into this category, but it is hard to deny that there must be a great many of them. And unfortunately, the species whose members are the fewest in number, the rarest, the most narrowly distributed – in short, the ones most likely to become extinct – are obviously the ones least likely to be missed by the biosphere. Many of these species were never common or ecologically influential; by no stretch of the imagination can we make them out to be vital cogs in the ecological machine. If the California condor disappears forever from the California hills, it will be a tragedy: but don't expect the chaparral to die, the redwoods to

[23] *Ibid.*, p. 192.

wither, the San Andreas fault to open up, or even the California tourist industry to suffer – they won't.[24]

The appearance of comments within the environmental literature that are consistent with Ehrenfeld's – and from authors whose academic standing is also worthy of respect – is uncommon but not unheard of.[25]

The low resilience assumption would appear to be confirmed by Lyons, *et al.*, who reiterate the precautionary approach in their assertion that because some rare species – such as top predators – have a keystone role, therefore any rare species might be similarly crucial to ecosystem functioning.[26] An appropriate example is the removal of wolves from Yellowstone National Park, which gave rise to an overpopulation of elk and subsequent environmental impacts, such as erosion and overgrazing of plant species palatable to the elk.[27]

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[24] David Ehrenfeld, "Why Put a Value on Biodiversity?" in *Biodiversity*, ed. Edward O. Wilson (Washington, DC: National Academy Press, 1988), pp. 214-15.

[25] See, for example, Colin Tudge, "The Rise and Fall of *Homo sapiens sapiens*," *Philosophical Transactions of the Royal Society of London B* (1989): 480-81; Alexej Ghilarov, "What Does 'Biodiversity' Mean – Scientific Problem or Convenient Myth?" Trends in Ecology and Evolution 11 (1996): 304-306; Sagoff, "Muddle or Muddle Through?", pp. 902-907, 930-31; Slobodkin, "The Good, the Bad and the Reified," pp. 5-6; David Western, "Human-Modified Ecosystems and Future Evolution," *Proceedings of the National Academy of Sciences USA* 98 (2001): 5462.

[26] Lyons, *et al.*, "Rare Species and Ecosystem Functioning," pp. 1019-24. In relation to an earlier quotation from Ehrenfeld, it should be noted that the California condor, despite being a top predator, is not a keystone species, an important reason being that there are very few condors surviving in the wild. This is discussed further in chapter eleven.

[27] Alston Chase, *Playing God in Yellowstone: The Destruction of America's First National Park*, (San Diego: Harcourt Brace Jovanovich, 1986), pp. 77-84.

However, despite the influence that rare species *can* have on ecosystem functioning, the concept of resilient ES decouples to some extent the relationship between provision of the service and ecosystem functioning. Although some rare species might be keystone species, resilient ES are those that remain relatively unaffected by comparatively 'normal' environmental fluctuations. In the case of Yellowstone, the wolves were wiped out not by natural environmental fluctuation, but by a deliberate hunting policy. It is not that the ES available in Yellowstone were necessarily sensitive, but that the species comprising this ecosystem were poorly managed. Through severe human mismanagement, any ecosystem may be degraded sufficiently that the provision of ES is threatened. As suggested earlier, although biodiversity decline might be a useful indicator of ecosystem degradation, it does not necessarily follow that such a decline, in itself, constitutes a threat to ES.

The low resilience assumption is undermined by the overwhelming tendency for the protection of identified endangered species to be justified by moral or aesthetic arguments, or a basic appeal to the necessity of conserving biodiversity, rather than by emphasising the specific ES these species provide or might be able to provide humanity. Often the only services that can be promoted in this regard relate to the 'scientific' or 'cultural' value of conserving a particular species, and the tourism revenue that might be associated with its continued presence in a particular area. The preservation of such services are of an entirely different order to the collapse of human civilization predicted by the more pessimistic environmental authors. It is apparent that some conservation projects actually have a negative impact on particular ecosystem services. For

example, the removal of forest and subsequent restoration of grassland will reduce the capacity of an area to sequester carbon dioxide and, in relation to 'cultural' ecosystem services, can cause a change in local character that is resented by the local community.[28] Another example is the reintroduction of large predators, such as wolves and grizzly bears, into areas where they had been formerly hunted to extinction. Plans for the latter prompted one United States Governor, in 2000, to comment that "many of us have made it clear we oppose the introduction of this flesh-eating, anti-social animal into Idaho. This is probably the first federal policy that knowingly can, and will, lead to injury and death of citizens."[29] It is clear that in this case, the restoration of ES was not the primary justification.

The low resilience assumption can reasonably be described as 'reification', in that it is a hypothesis that has assumed the status of an unimpeachable truth despite being seriously flawed.[30] Use of the term 'ecosystem services' perpetuates and reinforces the assumption in so far as it implies dependence of all services on particular ecosystems or species communities. In this regard, the term 'environmental services', employed

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[28] This hypothetical example has parallels with the 'Chicago restoration controversy' as described in Paul H. Gobster and R. Bruce Hull (eds.), *Restoring Nature: Perspectives from the Social Sciences and Humanities*, (Washington, DC: Island Press, 2000).

[29] Dick Kempthorne, quoted in Todd Wilkinson, "The Once and Future Grizzly," in *Return of the Wild: The Future of Our National Lands*, ed. Ted Kerasote (Washington, DC: Island Press, 2001), p. 173.

[30] Slobodkin, "The Good, the Bad and the Reified," pp. 1-4.

by authors such as Norman Myers in place of 'ecosystem services', would be more appropriate.[31]

The widespread implicit acceptance of the low resilience assumption is linked to the notion that biodiversity is the primary value of any natural area, and that biodiversity conservation should be the first priority of all natural area management. It is in this sense that a great many conservationists have been 'blinded by biodiversity' to the flaws in the biodiversity-ES argument.

VI. BLINDED BY BIODIVERSITY

Those who accept the low resilience assumption, and support the ES argument for biodiversity conservation, tend not to acknowledge that a great many ES may be maintained by management practices that do not involve the conservation of every component of biodiversity. As a result, it is frequently implied that natural area management is wasted without biodiversity conservation.

Mutsunori Tokeshi demonstrates this tendency in the book *Species Coexistence*, in which he reiterates the likelihood that destruction of natural ecosystems will bring about reductions in human material wellbeing. This relatively straightforward argument for taking measures to protect the ozone layer or large areas of forest provides the basis for discussion of the conservation of biodiversity without any intervening explanation for why one requires the other. This is especially confusing as it comes immediately

[31] Myers, "Environmental Services of Biodiversity," pp. 2764-69.

after an overview of the difficulties inherent in drawing connections between species extinction and ecosystem stability.[32]

Another illustration of this tendency to focus on biodiversity conservation and exclude consideration of any alternative is found in *Extinction*, where any consideration of land degradation in general is overwhelmed by the concern for species loss:

> It is impossible to separate protection of species from protection of natural ecosystems; they are two aspects of the same fundamental set of resources. Any of the public-service functions of an ecosystem may theoretically be affected by the deletion of *any* species from the system, and continued extinctions in the system are *certain* to cause disruption.[33]

This leads to the statement that "*all* [ecosystem services] will be threatened if the rate of extinctions continues to increase" followed by the observation that attempts to artifically replicate natural processes "are no more than partially successful in most cases. Nature nearly always does it better. When society sacrifices natural services for some other gain... it must pay the costs of substitution."[34] By assuming that the only alternative to protecting every species is a world in which all ES have been substituted by artificial alternatives, the Ehrlichs fail to acknowledge that natural areas may be conserved, and ES maintained, without dedicating particular attention to total species diversity. Paul Ehrlich revisits this flawed logic in

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[32] Tokeshi, *Species and Coexistence*, p. 362.

[33] Ehrlich and Ehrlich, *Extinction*, p. 86.

[34] *Ibid.*, pp. 95-96.

1997 in his response (with four co-authors) to doubts expressed by Mark Sagoff regarding economic arguments for species conservation. Sagoff's doubts are misconstrued as support for "the idea that technology can fully substitute for natural life-support systems"; an idea the authors then demonstrate to be "dangerously absurd" by describing the fate of the failed Biosphere 2 experiment.[35] Again, by casting biodiversity conservation as the only possible alternative to artificially optimizing the entire planet these authors fail to acknowledge that most ES may be maintained without requiring the dedication of resources to protecting every rare and threatened species.

Another common rhetorical device that betrays the same underlying motive is to present dramatic statistics on species abundance and extinction rates, or examples of land degradation, alongside the ES justification for conserving biodiversity, without acknowledging that the high extinction rates have little bearing on ES, and that land degradation is not caused by biodiversity decline. This device is evident in the popular environmental tract *It's a Matter of Survival*, by Anita Gordon and David Suzuki. The basic premise of this book is that "we have fewer than 10 years to turn things around or 'civilization as we know it will cease to exist'."[36] Concern about declining ES, arguments for conserving biodiversity, extinction

[35] Paul R. Ehrlich, Gretchen C. Daily, Scott C. Daily, Norman Myers and James Salzman, "No Middle Way on the Environment," *The Atlantic Monthly* 280 (1997): 101; This discussion of Biosphere 2 is also cited in a critique of Sagoff by Ernest Partridge, "Reconstructing Ecology," in *Ecological Integrity: Integrating Environment, Conservation, and Health*, ed. David Pimentel, Laura Westra and Reed F. Noss, (Washington, DC: Island Press, 2000), p. 88.

[36] Anita Gordon and David Suzuki, *It's a Matter of Survival*, (London: HarperCollins, 1991), p. 3.

statistics and examples of land degradation are so intermingled that the layperson could be forgiven for concluding that biodiversity loss is somehow to blame for the effects of large-scale rainforest clearance! Globally projected extinction statistics are particularly misleading in this context. Estimates of total species numbers and current extinction rates gain their impressive magnitude, and rhetorical force, from the millions of types of insects, algae and micro-organisms whose existence can be extrapolated from current knowledge. The extinction rates, estimated by E.O. Wilson to be in the order of 27,000 species every year, are largely the result of multiplying the number of unknown species that have been found in small areas of tropical rainforest with the current rates of rainforest clearance in places like the Amazon and Indonesia.[37] These various estimates are essentially superfluous to ES because most of the species are of such small distribution, such as the 3,000 species of beetle recorded from 5 by 12 m^2 plots in the Amazon,[38] that they have negligible influence on the provision of ES. Such species are not even useful as indicators of habitat destruction given their extreme endemism and largely theoretical existence. Perhaps their only 'practical' value is to provide conservationists with rhetorically useful statistics.[39]

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[37] Edward O. Wilson, *The Diversity of Life*, (Cambridge: Harvard University Press, 1992)

[38] Terry L. Erwin, "The Tropical Forest Canopy: The Heart of Biotic Diversity," in *Biodiversity*, ed. Wilson, pp. 123–129. Each of these study areas was only twelve metres square.

[39] See, for example, Stephen Budiansky, *Nature's Keepers: The New Science of Nature Management*, (New York: The Free Press, 1995), pp. 164-68; Richard J. Ladle, Paul Jepson, Miguel B. Arújo and Robert J. Whittaker, "Crying Wolf on Climate Change and Extinction," *Nature* 429 (2004): 799.

The intermingling of ES arguments with dramatic examples of land degradation and ecological collapse is similarly misleading. For example, in a background paper to the 2002 United Nations Conference on Environment and Development, scientists commissioned by the Swedish government draw on such impacts as over-consumption of water in Greece, land salination in Australia, and over-grazing in Jordan to highlight the need for biodiversity conservation in order to improve ecosystem resilience and long-term provision of ES.[40] Yet, as noted earlier, biodiversity conservation is largely irrelevant when considering the effect of these sorts of impacts on ES. Diminished provision of such services is caused not by declining biodiversity but human mismanagement. Although management programs dedicated to conserving biodiversity may ameliorate such impacts, or prevent them taking place, it would be more straightforward to orient management to the services themselves, as demonstrated by the restrictions on certain activities in catchment reserves all over the world to safeguard the quality of drinking water.

In some respects the tendency to reconceive all environmental management activities in terms of biodiversity conservation is the result of the conflation of two senses of biodiversity, as discussed in the previous chapter. However, it is also possible that proponents of biodiversity conservation are deliberately taking advantage of the complexity inherent in these distinctions in order to present their cause in the most dramatic light.

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[40] Carl Folke, *et al.*, *Resilience and Sustainable Development: Building Adaptive Capacity in a World of Transformation*, (Stockholm: The Environmental Advisory Council to the Swedish Government, 2002), pp. 34-36.

VII. CONCLUSION

The maintenance of ES provides a powerful argument for the conservation of biodiversity. However, this argument is flawed insofar as it does not acknowledge the extent to which different ES vary with regard to their dependence upon particular species groupings. While some services are especially sensitive to ecosystem change, many are not, and will continue to be provided despite considerable shifts in ecosystem dynamics. In the case of these more resilient ES, the precautionary principle is less relevant as it is less difficult to determine whether an ES is susceptible to species loss than whether the loss of a particular species will have disproportionate ramifications for ecosystem functioning. Therefore it is easier to determine which species are essentially superfluous to the provision of ES. Advocates of biodiversity conservation tend to assume that all ES are highly sensitive to changes in species composition. This 'low resilience assumption' is reinforced by the term 'ecosystem services', by a fixation on the necessity of conserving rare species, and by over-dramatising extinction rates and examples of degradation in support of the ES argument for biodiversity conservation. As discussed in the next chapter, excessive reliance on such instrumental arguments for the conservation of biodiversity is a risky strategy given the shortcomings identified here.

Chapter Four

THE VALUE OF BIODIVERSITY: COMMERCIAL OPPORTUNITY

Today those who wish to protect the natural environment rarely offer ethical or spiritual reasons for the policies they favor. Instead they say we are running out of resources or causing the collapse of ecosystems on which we depend. Predictions of resource scarcity appear objective and scientific, whereas pronouncements that nature is sacred or that greed is bad appear judgemental or even embarrassing in a secular society.

Mark Sagoff (1997)[1]

I. INTRODUCTION

We now turn our attention to another important instrumental argument for conserving biodiversity; the commercial opportunities. This is followed by consideration of the risk to environmentalists that stems from overemphasis of the instrumental benefits of biodiversity when, for many people, it is the non-instrumental values that are felt to be more important.

II. THE COMMERCIAL VALUE OF BIODIVERSITY

An important argument for conserving biodiversity is that we cannot know for certain whether what is lost has potential commercial value, under current socio-economic conditions or at some time in the future.

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[1] Mark Sagoff, "Do We Consume Too Much?" *The Atlantic Monthly* 279 (1997): 82-83.

Hence the precautionary principle dictates that we should not allow any aspect of nature to be lost in case we contribute to the demise of genes, organisms, or ecosystems whose value is not yet fully comprehended. Arguments of this type, supported by many examples of commercially useful products sourced from wild species, are used to support the protection of biodiversity hotspots such as the Amazon rainforest,[2] and were an important consideration in drafting the *Convention on Biological Diversity*.[3]

Whether or not it is economically prudent to conserve biodiversity is a question on which there is a variety of conflicting perspectives. There are certainly many examples available where obscure plant species have been discovered to have extremely beneficial properties, resulting in considerable wealth generation and improvements to human health and material well-being.[4] However, not all of these species are particularly rare. For example, Hanne Svarstad identifies two high profile instances where conservationists have used particular examples of successful bioprospecting – the periwinkle, and the 'Hardangervidda fungus' – to

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[2] Paul R. Ehrlich and Anne H. Ehrlich, *Extinction: The Causes and Consequences of the Disappearance of Species*, (London: Victor Gollancz, 1982), pp. 53-76; Andrew Beattie and Paul Ehrlich, *Wild Solutions: How Biodiversity is Money in the Bank*, (Melbourne: Melbourne University Press, 2001).

[3] John A. Hannigan, *Environmental Sociology: A Social Constructionist Perspective*, (London: Routledge, 1995), pp. 147-48; Valérie Boisvert and Franck-Dominique Vivien, "The Convention on Biological Diversity: A Conventionalist Approach," *Ecological Economics* 53 (2005): 463-65.

[4] Hugh H. Iltis, "Serendipity in the Exploration of Biodiversity," in *Biodiversity*, ed. Edward O. Wilson (Washington, DC: National Academy Press, 1988), pp. 98-105; Christopher Joyce, "Taxol: Search for a Cancer Drug," *BioScience* 43 (1993): 133-36.

justify biodiversity conservation while overlooking the fact that both these species were under no threat of extinction.[5] Conservation activities would not have increased the likelihood of humans gaining commercial benefit from these particular species. They provide justification for biodiversity conservation only as examples of the potential benefits that species *might* have. Again, the precautionary principle has an important role to play in supporting the case for conservation.

From a conservation perspective, the most persuasive examples of successful bioprospecting are from the biodiversity hotspots, as it is these areas that have the highest global conservation priority. The best example comes from Costa Rica where large areas of rainforest have been reserved and contracts signed with companies who wish to search these areas for commercially valuable species.[6] Authors such as Tamayo, Guevara and Gámez are optimistic in their assessment of the success of this venture, despite emphasising the costs and low probability that a particular patent will ever become a marketable product.[7] In contrast, Kerry ten Kate and Sarah Laird state that:

> Currently, capital markets, corporate mergers and research directors are less attracted to natural products than to alternative fields of discovery and development. In many sectors, research dollars are

[5] Hanne Svarstad, "The Historical Context of Present Bioprospecting – Four Cases," in *Microbial Diversity and Bioprospecting*, ed. Alan T. Bull, (Washington, DC: ASM Press, 2004), pp. 440-44.

[6] David Takacs, *The Idea of Biodiversity: Philosophies of Paradise*, (Baltimore: The Johns Hopkins University Press, 1996), pp. 288-308.

[7] Giselle Tamayo, Lorena Guevara and Rodrigo Gámez, "Biodiversity Propsecting: The INBio Experience," in *Microbial Diversity*, ed. Bull, pp. 445-49.

> flowing out of natural products and into synthetic chemistry to fund rational drug design, combinatorial approaches and genetics, often with a focus largely on human material. The jury is out on the future of natural products.[8]

Similarly, Valérie Boisvert and Franck-Dominique Vivien suggest that the bioprospecting boom anticipated in the wake of the *Convention on Biological Diversity* has failed to materialise.[9] In Costa Rica, the major contract between INBio and the large pharmaceutical company Merck was only for the period 1991 to 1999. It was not renewed, presumably because in this time sufficient genetic material was collected for research purposes, with 27 patents eventually registered. A number of smaller companies remain involved.[10] Theoretical investigations of the economics of bioprospecting have tended to reinforce the more pessimistic view of the potential for funding biodiversity conservation from the profits of pharmaceutical development.[11]

Whether or not the experience in Costa Rica proves to be economically sustainable it needs to be acknowledged that bioprospecting supports the case for biodiversity conservation only in biodiversity hotspots, where

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[8] Kerry ten Kate and Sarah A. Laird, "Biodiversity and Business: Coming to Terms With the 'Grand Bargain,'" *International Affairs* 76 (2000): 260-61.

[9] Boisvert and Vivien, "The Convention on Biological Diversity," p. 442.

[10] Tamayo, *et al.*, "Biodiversity Propsecting," pp. 446-49.

[11] See, for example, David Pearce, "Environmental Market Creation: Saviour or Oversell?" *Portuguese Economic Journal* 3 (2004): 132-38; Christopher Costello and Michael Ward, "Search, Bioprospecting and Biodiversity Conservation," *Journal of Environmental Economics and Management* 52 (2006): 615-26; Robin Naidoo and Taylor H. Ricketts, "Mapping the Economic Costs and Benefits of Conservation," *PloS Biology* 4 (2006): 2159.

there exists an almost unlimited reservoir of species that could be commercially useful *and* which are at risk of extinction. Outside such areas the extinction rate is much lower and there is a greater likelihood that threatened species will already have been assessed and found to have no commercial value, or have been sufficiently conserved by *ex situ* means for possible future use.

The amount of genetic material conserved in artificial environments has greatly expanded during the past few decades, particularly through the use of 'gene banks' as opposed to traditional methods such as zoos and botanic gardens. Some of the largest repositories include the various facilities administered by the Consultative Group on International Agricultural Research (CGIAR), and the Millennium Seed Bank Project at Kew in England.[12] Such efforts have culminated in the *International Treaty on Plant Genetic Resources for Food and Agriculture*, administered by the UN Food and Agriculture Organization (FAO), which came into force in 2004.[13] The conservation of biodiversity by such means is not generally presented as justification for diminishing the protection of wild populations.[14] However, it seems unavoidable that the commercial

[12] See the websites of the CGIAR (http://www.cgiar.org) and the Millennium Seed Bank Project (http://www.rbgkew.org.uk/msbp).

[13] See the website of the FAO (http://www.fao.org/ag/cgrfa).

[14] Edward O. Guerrant, Kayri Havens and Mike Maunder (eds.), *Ex Situ Plant Conservation: Supporting Species Survival in the Wild*, (Washington, DC: Island Press, 2004).

justification for the protection of biodiversity hotspots will be diminished somewhat as gene bank collections grow in size.[15]

Another aspect of the commercial value of biodiversity is the capacity of species richness to generate tourist revenue. As Naidoo and Adamowicz demonstrate in their study of a rainforest reserve in Uganda, some tourists are willing to pay more to visit locations with greater number of species.[16] However, such findings do not indicate that all concentrations of biodiversity have potential commercial value. Some species, such as birds, will attract greater attention than others. Further, the commercial viability of ecotourism ventures is governed by the usual rules of supply and demand. For example, although a variety of sites might feature the same diverse array of species, commercial exploitation of people wishing to experience this diversity might only be viable if all tourist demand is concentrated at one of these sites.

III. THE PRECAUTIONARY PRINCIPLE

As in the previous chapter, the precautionary principle has an important role to play in buttressing commercial arguments for biodiversity conservation, and application of the principle is a value-laden process. Cass Sunstein points out that the principle can be used to justify the status quo

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[15] Désirée M. McGraw, "The Story of the Biodiversity Convention: From Negotiation to Implementation," in *Governing Global Biodiversity: The Evolution and Implementation of the Convention on Biological Diversity*, ed. Philippe G. Le Prestre (Aldershot: Ashgate, 2002), pp. 27, 38.

[16] Robin Naidoo and Wiktor L. Adamowicz, "Economic Benefits of Biodiversity Exceed Costs of Conservation at an African Rainforest Reserve," *Proceedings of the National Academy of Sciences (USA)* 102 (2005): 16712-16.

or dramatic intervention depending on how one phrases the problem. He demonstrates this with reference to the decision of the United States to invade Iraq prior to completion of the UN weapons inspection program. President George W. Bush believed that ensuring the safety of his country's interests outweighed the requirement for proof of weapons of mass destruction.[17] When applied to the potential commercial value of biodiversity it is apparent that the direction suggested by the precautionary principle is similarly ambiguous. Following Sunstein, if one adopts the perspective of many people who live in biodiversity hotspots, the precautionary approach suggests that it is better to clear the forest now, to generate forestry income and provide room for new farms, than to wait for the indirect and unassured future economic benefits of conserving and exploiting biodiversity.

The highest concentrations of biodiversity, and the greatest threats to biodiversity, are found in the tropical rainforests of developing countries such as Brazil, Peru, Indonesia, Papua New Guinea and Madagascar. For most citizens of these countries, the profits arising from bioprospecting or ecotourism ventures are unlikely to have much effect on their quality of life. In most instances, forest clearance and agricultural development will generate greater income, thereby leading to considerable social pressure for this outcome. The experience of 'debt for nature swaps' – pioneered in the late-1980s, and involving the agreement of a developing country to increase expenditure on conservation in exchange for a reduction in its foreign debt – demonstrates the difficulty of convincing local communities

[17] Cass R. Sunstein, *Laws of Fear: Beyond the Precautionary Principle*, (New York: Cambridge University Press, 2005), pp. 13-63.

to conserve biodiversity. Most of the resources liberated by such schemes for conservation are committed to enforcing reserve boundaries and deterring poachers. The reduction in foreign debt attributed to such schemes amounts to a tiny proportion of the total, and hence the capacity of respective national governments to improve local services is in no way improved.[18] While the conservation projects may provide local employment opportunities and tourist revenue, the desire of local communities and primary producers to utilise their rainforests more intensively than considered appropriate by conservationists is unlikely to be mollified by optimistic promises from outsiders. Societies like Australia and the United States, whose traditions have been heavily influenced by the development of 'wild' land, are well aware of the momentum associated with ideologies of progress linked to the clearance of forest.

As argued by Henk van den Belt and Bart Gremmen, and discussed briefly in the previous chapter, the application of the precautionary principle always requires trade-offs in relation to the benefits and risks associated with particular courses of action. Science cannot provide definitive answers, merely guidance as to the possible range of outcomes and an indication of their probability, although even in this regard some

[18] Robert T. Deacon and Paul Murphy, "The Structure of an Environmental Transaction: The Debt for Nature Swap," *Land Economics* 73 (1997): 1-24; Dal Didia, "Debt-for-Nature Swaps, Market Imperfections, and Policy Failures as Determinants of Sustainable Development and Environmental Quality," *Journal of Economic Issues* 35 (2001): 477-486.

degree of subjective input remains necessary.[19] As observed by Mark Sagoff:

> To be sure, one never knows that any of the 600,000 kinds of beetles on earth might prove valuable... One never knows, for that matter, that the next person born could be another Shakespeare. Uncertainty provides no more reason to protect every creature than to produce every conceivable child or hire every worker or publish every book. There are costs and benefits to be weighed in all these instances.[20]

Ultimately the choice about which opportunities ought to be pursued will reflect the values considered important by those with the most influence. If the commercial opportunities associated with conserving biodiversity are as promising as some conservationists suggest, then the regular action of the free-market will assist in bringing about this end. Otherwise, the best that can be hoped for is that bioprospecting helps to offset the costs of conservation, which will take place despite the low economic return, demonstrating that the commercial argument was never the primary reason for conserving biodiversity. As noted by David Takacs, conservation biologists have a tendency "to *use anything that works* to convince people to adopt their values."[21] He concludes that "if economic concerns are not their primary motivation for valuing biodiversity – and they do not seem to

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[19] Henk van den Belt and Bart Gremmen, "Between Precautionary Principle and 'Sound Science': Distributing the Burdens of Proof," *Journal of Agricultural and Environmental Ethics* 15 (2002): 103-22.

[20] Mark Sagoff, "Muddle or Muddle Through? Takings Jurisprudence Meets the Endangered Species Act", *William and Mary Law Review* 38 (1997): 986.

[21] Takacs, *The Idea of Biodiversity*, p. 131.

be for any of the biologists profiled here – then it is dangerous, disingenuous, and dishonest to pitch this argument too feverishly."[22]

IV. NEGATIVE IMPLICATIONS OF THE FOCUS ON INSTRUMENTAL VALUES

Instrumental arguments for conserving biodiversity, or anything that is primarily valued for non-instrumental reasons, carry the risk that the argument will be found to contain some flaw, that circumstances will change such that the argument is no longer valid, or that, when taken to its logical extreme, the argument will have a detrimental impact on the qualities that are valued non-instrumentally. These shortcomings are apparent in justifications for the conservation of biodiversity on the basis of commercial opportunity. The argument is flawed in that it does not take into account the commercial benefits associated with forest development. In addition, changing circumstances, such as developments in genetic engineering or increased representation within gene banks, will further reduce the validity of the argument. Taken to its logical extreme, justifying biodiversity conservation on the basis of commercial opportunity would condemn any rare species to extinction in the wild if it could be shown that the economic benefits associated with development of its habitat outweighed its commercial value. As noted by Ian Swingland:

> If species are to be viewed as a resource, and their maintenance is to be cost-effective, conservation should concentrate on systems and

[22] *Ibid.*, p. 283.

areas rich in species, and on those species known to be useful. Thus biodiversity and its conservation would be defined purely along operational or cost-benefit lines. This bioasset perspective on biodiversity would therefore rest upon economic arguments more than biological ones.[23]

Commercial opportunity comprises one facet of the ecosystem services (ES) argument for biodiversity conservation. It was noted in the previous chapter that to best ensure provision of ES, a prudent approach would be to direct management attention to the actual species and populations that provide particular services, rather than to biodiversity in general. Such an approach has been articulated by a variety of authors, most significantly in a paper published in 2003 by Luck, Daily and Ehrlich. They suggest that understanding the link between biodiversity loss and ES is better served by identifying those particular species populations that most contribute to the provision of particular services. These services may then be maintained by ensuring that the various populations of the relevant species (described as 'service-providing units') remain viable, which is achieved by orienting management toward 'population diversity'.[24] It seems inevitable that such an approach will only reinforce what has been stressed above: that land management practices have much greater influence on most ES than the status of biodiversity. It is a short step from here to the likelihood that

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[23] Ian R. Swingland, "Biodiversity, Definition Of," in *Encyclopedia of Biodiversity*, volume one, ed. Simon Asher Levin (San Diego: Academic Press, 2001), p. 389.

[24] Gary W. Luck, Gretchen C. Daily and Paul R. Ehrlich, "Population Diversity and Ecosystem Services," *Trends in Ecology and Evolution* 18 (2003): 331-336.

greater knowledge of which species are best able to provide certain ES will encourage a more interventionist approach to managing natural areas in order to maximise the success of these particular species and the associated ES. For example Guo, Xiao and Li identify forest communities that regulate the storage and release of water in a manner most beneficial for the generation of hydroelectric power.[25] Manuel Lerdau and Lawrence Slobodkin note the varying capacity of certain tree species to emit volatile organic compounds, which play an important role in regulating atmospheric chemistry.[26]

Many conservationists have called for the economic value of ES to be incorporated into government and corporate decision-making processes.[27] Daniel Janzen, for example, suggests that we reconceive "conserved tropical wildlands as wildland gardens" so that we might come to think of

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[25] Z.W. Guo, X.M. Xiao and D.M. Li, "An Assessment of Ecosystem Services: Water Flow Regulation and Hydroelectric Power Production," *Ecological Applications* 10 (2000): 925-36.

[26] Manuel Lerdau and Lawrence Slobodkin, "Trace Gas Emissions and Species-Dependent Ecosystem Services," *Trends in Ecology and Evolution* 17 (2002): 309-312.

[27] Gretchen C. Daily, *et al.*, "Ecosystem Services: Benefits Supplied to Human Societies by Natural Ecosystems," *Issues in Ecology* 2 (1997): 1-16; Derek Eamus, *et al.*, "Ecosystem Services: an Ecophysiological Examination," *Australian Journal of Botany* 53 (2005): 14-15; Claire Kremen, "Managing Ecosystem Services: What Do We Need to Know About Their Ecology?" *Ecology Letters* 8 (2005): 475-76. For a critique of this policy see Mark Sagoff, "Locke was Right: Nature Has Little Economic Value," *Philosophy and Public Policy Quarterly* 25 (2005): 2-9.

natural areas and their biodiversity as productive investments.[28] With this possibility in mind, an ES-centered approach to conservation could give rise to a situation whereby species identified as best able to regulate water flows, emit useful gases, fix carbon, filter nutrients, reduce water tables, and so on, are encouraged at the expense of natural communities. This would be a 'natural' outcome of the routine operation of market forces.[29] Related fears have been expressed by a great number of authors. For example, Peter Taylor observes that:

> There is a mentality in the industrialized world that would see each and every component of our supporting ecosystems managed and engineered for our global benefit as expressed in a market of commodities and services. For those with this mentality, the Amazon constitutes a planetary control service... Some eco-technicians have emerged with plans for global forest cover to be managed for optimum carbon efficiency... Deserts could be plastered with photovoltaic solar collectors to power the emerging hydrogen economy. And the wild? Little pockets of eco-tourism – service providers for the remnant sensitives. If we are to avoid this soul-less future, I believe we have to move now and go beyond the utilitarian arguments of ecosystem dynamics.[30]

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[28] Daniel Janzen, "Gardenification of Tropical Conserved Wildlands: Multitasking, Multicropping, and Multiusers," *Proceedings of the National Academy of Sciences USA* 96 (1999): 5987-94.

[29] Sagoff, "Muddle or Muddle Through?" p. 901.

[30] Peter Taylor, *Beyond Conservation: A Wildland Strategy*, (London: Earthscan, 2005), pp. 13-14.

A number of authors have raised the point that by presenting ES as the most compelling justification for protecting biodiversity, conservationists leave themselves vulnerable to any observations that might suggest otherwise, such as if a particular ES can be more efficiently provided by artificial means, or if adverse interpretations of experiments on biodiversity and ecosystem functioning come to be accepted.[31]

On the one hand it is appropriate that the management of natural areas be informed by attention to exactly what aspects are required to support human material well-being. Yet at the same time it must be recognised that, above a minimum threshold of need, material well-being is not the only criterion of value; there are other values that must be considered. The ES justification for conserving biodiversity is dangerous precisely because it de-emphasises these other values, which some argue provide the basis of our concern for biodiversity in the first place.

V. CONSIDERATION OF OTHER VALUES

Instrumental arguments do not provide the only justification for the conservation of biodiversity. Several prominent authors and institutions have suggested that values other than the purely utilitarian more accurately reflect the sentiments of conservationists. One of the most respected critics

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[31] David Ehrenfeld, *The Arrogance of Humanism*, (Oxford: Oxford University Press, 1981), pp. 200-204; Takacs, *The Idea of Biodiversity*, pp. 281-87; David A. Wardle, *et al.*, "Biodiversity and Ecosystem Function: an Issue in Ecology," *Bulletin of the Ecological Society of America* 81(2000): 238; Michael L. Rosenzweig, *Win-Win Ecology: How the Earth's Species Can Survive in the Midst of Human Enterprise*, (New York: Oxford University Press, 2003), p. 41; Clive Hambler, *Conservation*, (Cambridge: Cambridge University Press, 2004), p. 317.

of utilitarian justifications for species conservation is David Ehrenfeld. In 1978, he suggested that the intrinsic value of a species should be sufficient "to justify its protection – but not necessarily to assure its safety in this human-obsessed world culture."[32] This reflects the view of Aldo Leopold, who believed that species should be allowed to persist "as a matter of biotic right, regardless of the presence or absence of economic advantage to us."[33]

In a similar vein is the perspective of the prolific English science journalist, Colin Tudge, who also believes that utilitarian reasons for protecting natural variety have been overemphasised, and that the actual motivations of those who wish to preserve species are better captured by moral and theological arguments.[34] This sits easily alongside the observation from English geographer Steven Trudgill that "the conservation ethic is more firmly based on notions of peace, enjoyment and feelings of being with nature rather than on any functional arguments about ecosystems."[35] Trudgill provides a long list of 'emotional' values, many of which will be explored in the chapters following this one:

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[32] Ehrenfeld, *The Arrogance of Humanism*, p. 210.

[33] Aldo Leopold, *A Sand County Almanac With Other Essays on Conservation from Round River*, (New York: Oxford University Press, 1966), p. 226.

[34] Colin Tudge, "The Rise and Fall of *Homo sapiens sapiens*," *Philosophical Transactions of the Royal Society of London B* (1989): 481-86; Colin Tudge, *The Variety of Life: A Survey and a Celebration of all the Creatures That Have Ever Lived*, (Oxford: Oxford University Press, 2000), pp. 625-26.

[35] Stephen Trudgill, "Psychobiogeography: Meanings of Nature and Motivations for a Democratized Conservation Ethic," *Journal of Biogeography* 28 (2001): 692.

> The important motivators are the 'feelgood' factor of saving something rare, the feeling of privilege of seeing what not everyone can see, it is the stewardship feeling, the feeling of our facilitation through nature, it is the diversity and richness feeling, it is the putative wildness and naturalness feeling, it is the enthusiasm and passion for particular species, the sense of wonder and, above all, the personal feelings and meanings which we have to deal with if we wish to foster the democratized will to conserve.[36]

Sagoff and Neil Evernden are two other prominent authors in firm support of the position that religious, aesthetic, cultural, and moral arguments for species preservation are more appropriate than economic ones.[37]

Non-utilitarian justifications for preserving biodiversity have in recent years attracted increasing attention at the international level, from both the United Nations Environment Program,[38] and the World Conservation Union (IUCN).[39] In his introduction to the IUCN publication *The Full Value of Parks: From Economics to the Intangible*, Allen Putney observes that:

> Current international discourse on protected areas and the programmatic themes of international organizations (with the

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[36] *Ibid.*, p. 694.

[37] Sagoff, "Muddle or Muddle Through?", pp. 901, 911; Sagoff, "Do We Consume Too Much?" p. 96; Neil Evernden, *The Natural Alien*, (Toronto: University of Toronto Press, 1985), pp. 18-34.

[38] Darrell A. Posey (ed.), *Cultural and Spiritual Values of Biodiversity*, (Nairobi: United Nations Environment Program, 1999)

[39] David Harmon and Allen D. Putney (eds.), *The Full Value of Parks: From Economics to the Intangible*, (Lanham: Rowman & Littlefield, 2003)

> notable exception of the World Heritage and Biosphere Reserve Programs of UNESCO) pay scant attention to intangible values. It is as if science and economics were considered adequate tools for characterizing the qualities of the intricate web of life... This seems to be a reflection of the Western tendency to concentrate on 'knowing' based on scientific, technical, and economic criteria, while assigning less importance to other ways of knowing through humanistic, cultural, and spiritual means.[40]

The Millennium Ecosystem Assessment (MEA) also acknowledges the significance of non-utilitarian values, indicating that if such values are not incorporated into decision-making processes far less biodiversity will eventually be conserved.[41] However, recognition of the importance of these non-utilitarian or 'intangible' values creates something of a dilemma for scientists working in the relevant disciplines. Non-instrumental arguments are less persuasive than evidence linking species extinction to the loss of life-saving drugs, poverty-alleviating wealth, or even the collapse of human civilization. In addition, as discussed in chapter two, recognition of the significant influence of 'intangible' values on those who advocate the conservation of biodiversity undermines the credibility of the science that supports this end.

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[40] Allen D. Putney, "Introduction: Perspectives on the Values of Protected Areas," in *The Full Value of Parks*, ed. Harmon and Putney, p. 4.

[41] Millennium Ecosystem Assessment, *Ecosystems and Human Well-being: Biodiversity Synthesis*, (Washington, DC: World Resources Institute, 2005), pp. 7-8.

VI. CONCLUSION

Towards the end of his book, concluding a lengthy discussion and many interviews with leading conservation biologists, Takacs feels able to refer to "the wobbly foundation of biodiversity."[42] Investigation of the values associated with biodiversity in this and the preceding chapter has expanded on why the biodiversity concept may be considered 'wobbly'. The arguments examined, although rational and compelling to some degree, have numerous shortcomings. None are sufficient to justify the conservation of biodiversity. It is only when considered together, with the objections specific to each obscured by generalisation, that the conservation of biodiversity seems justified on purely instrumental grounds. As noted in chapter two, the non-instrumental values of biodiversity play a significant role in supporting the instrumental arguments. It is to these non-instrumental values that we now turn.

[42] Takacs, *The Idea of Biodiversity*, p. 336.

Chapter Five

THE NON-INSTRUMENTAL VALUES OF BIODIVERSITY

Concern for biological diversity stands, in a sense, as the most central value of environmentalism because other environmental goals such as resource protection, pollution abatement, and so forth all depend upon the continued functioning of complex ecosystems.

Bryan Norton (1987)[1]

I. INTRODUCTION

For many people, the non-instrumental values of biodiversity, being those values that are not derived through an assessment of utility, are of greater significance than the instrumental values that tend to be more often presented in support of biodiversity conservation. Two non-instrumental values will be examined here: the intrinsic value of biodiversity, and values associated with its capacity to inspire scientific interest. With regard to the intrinsic value of biodiversity, consideration of this claim requires first that one contemplate whether or not objective intrinsic value can be located in nature at all. Although of interest, investigation of this question is so unlikely to yield a definitive answer that no attempt will be made. Instead, it will be assumed that objective intrinsic value *does* exist in nature, with the broader question concerning the validity of this assumption left alone.

[1] Bryan G. Norton, *Why Preserve Natural Variety?*, (Princeton: Princeton University Press, 1987), p. 156.

II. THE INTRINSIC VALUE OF BIODIVERSITY

Intrinsic value, in so far as it relates to things in nature, is generally taken to refer to values that are independent of human valuation. Entities with intrinsic value are deemed valuable even if they exist on a planet on the far side of the galaxy, forever lying outside the boundaries of human knowledge. Warwick Fox observes that various qualities of nature have been described as sources of intrinsic value, including sentience, the capacity for autopoiesis (self-sustaining organization) and collective autopoiesis (ecosystems, for example), and the cosmic purpose seen to manifest in all living things.[2] It has also been suggested that biological diversity has intrinsic value. This claim has consistently been promoted by conservation biologists, for whom the intrinsic value of biodiversity is something of a foundation principle.[3] Deep ecology also includes the intrinsic value of biodiversity as one of its central principles, both as a norm of 'Ecosophy T' and within the 'deep ecology platform'.[4] Most

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[2] Warwick Fox, *Toward a Transpersonal Ecology: Developing New Foundations for Environmentalism*, (Foxhole: Resurgence, 1995), pp. 161-84.

[3] Statements to this effect by Aldo Leopold and David Ehrenfeld were cited in the previous chapter. See also discussions by Michael E. Soulé, "What is Conservation Biology?" *Bioscience* 35 (1985): 727-34; Reed F. Noss and Allen Y. Cooperrider, *Saving Nature's Legacy*, (Washington, DC: Island Press, 1994), p. 84; David Takacs, *The Idea of Biodiversity: Philosophies of Paradise*, (Baltimore: The Johns Hopkins University Press, 1996), pp. 247-49; Dwight Barry and Max Oelschlaeger, "A Science for Survival: Values and Conservation Biology," *Conservation Biology* 10 (1996): 905-911.

[4] Arne Naess (translated by David Rothenberg), *Ecology, Community and Lifestyle*, (Cambridge: Cambridge University Press, 1989), pp. 29, 46. However, the proponents of deep ecology are unwilling to commit to the formal notion of

significantly, this principle is restated in the first paragraph of the preamble of the *Convention on Biological Diversity*.

The claim that biodiversity has intrinsic value will be approached by considering the three different forms of intrinsic value identified by John O'Neill.[5] The first is that it describes values that are subjective, and therefore anthropocentric, yet have not been derived through consideration of utility. Such values are associated with the sensation that something is valued 'for itself', while recognizing that this value is not independent of the process of valuation. The term 'inherent value' is often used to describe this category of value. One example of inherent value is the scientific interest that biodiversity can inspire, which is discussed in detail below. Another relates to the aesthetic qualities of a diversity of living organisms. A diversity of flowers, for example, or of bird species, can generate a stimulating combination of colour, sound and movement. In addition to valuing the individual organisms for their contribution to this display we may also value the diversity itself. Two related theories that can be seen to ascribe this form of intrinsic value to biodiversity are the 'land ethic'[6] and 'biophilia'.[7] Both suggest that reverence for biodiversity and its components is the result of the competitive advantage that such feelings

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objective intrinsic value. See Peter Hay, *Main Currents in Western Environmental Thought*, (Sydney: UNSW Press, 2002), pp. 35, 46-47.

[5] John O'Neill, "The Varieties of Intrinsic Value," *The Monist* 75 (1992): 119-20.

[6] J. Baird Callicott, "Non-Anthropocentric Value Theory and Environmental Ethics," *American Philosophy Quarterly* 21 (1984): 299-307.

[7] Edward O. Wilson, *Biophilia: The Human Bond with Other Species*, (Cambridge: Harvard University Press, 1984); Stephen R. Kellert & Edward O. Wilson (eds.), *The Biophilia Hypothesis*, (Washington, DC: Island Press, 1993).

would have conferred on our distant ancestors, and that humans have subsequently developed an instinctive predisposition to value a diversity of living organisms.

It is possible that all intrinsic values relate back to this first form of intrinsic value. If a person feels something in nature to be valuable 'for itself', but is not aware of any explanation for this feeling, then they might well believe that the value is independent of themselves and their valuation. This perspective accords with the third form of intrinsic value, although, as noted above, detailed analysis of this meta-ethical issue is beyond the scope of this thesis. We return to inherent values in chapter seven, although considered with respect to nature more generally rather than just biodiversity.

The second form of intrinsic value describes values associated with the intrinsic qualities of that which is valued. However, it is unlikely that this interpretation encompasses the value of biodiversity. As O'Neill explains, 'intrinsic qualities' are 'non-relational qualities', and rarity and diversity do not satisfy this criteria, being good examples of relational qualities.[8] A similar point is made by Cuomo: "to claim that something is ethically valuable merely because it is unlike something else is incoherent – to be ethically valuable something must itself have a certain quality or status, even if that quality or status is contextually determined."[9] Hence, with regard to the second interpretation it appears that the claim that biodiversity has intrinsic value is untenable.

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[8] O'Neill, "The Varieties of Intrinsic Value," p. 124.

[9] Chris J. Cuomo, *Feminism and Ecological Communities: An Ethic of Flourishing*, (London: Routledge, 1998), p. 132.

This leaves us to consider the third interpretation of intrinsic value, which is that it describes values that are 'objective', being independent of human valuations. Although a strong argument has so far been made for the 'subjective' intrinsic value of biodiversity, consistent with the first form of intrinsic value, there are many who believe that its value can be independent of human valuation. For example, in his interviews with twenty-three prominent conservation biologists, Takacs found that over half believed this to be the case.[10] O'Neill links these values to the condition of having 'goods', in that some things can be said to be 'good' for the entity in question.[11] In biological terms this translates into objective value being derived from the condition of having 'a life'; a position held by a variety of authors.[12] Of significance for the question of whether biodiversity has intrinsic value is O'Neill's subsequent claim that ecosystems can also be said to have 'goods', because "we can meaningfully talk of what is damaging to them."[13] He then argues that we ought to value the flourishing of such collective entities because "such care for the natural world is constitutive of a flourishing human life." He explains that this is not an anthropocentric position because we are capable of valuing "items in the natural world for their own sake, not simply as an external means to our own satisfaction."[14] However, it is in this crucial transition from 'is' to 'ought' that his argument comes unstuck. In noting our capacity to value things 'for themselves' he ties the intrinsic value of

[10] Takacs, *The Idea of Biodiversity*, pp. 247-70.

[11] O'Neill, "The Varieties of Intrinsic Value," pp. 128-29.

[12] See Hay, *Main Currents in Western Environmental Thought*, pp. 50-51.

[13] O'Neill, "The Varieties of Intrinsic Value," p. 130.

[14] *Ibid.*, p. 133.

collective entities back to the first form of intrinsic value. Hence their value cannot be said to be independent of human valuations.

This conclusion accords with Rolston's perspective on ecosystems. For him, the notion of intrinsic value is not "satisfactory at the level of the ecosystem. Though it has value *in* itself, the system does not have any value *for* itself. Though a value producer it is not a value owner."[15] Instead of intrinsic value he suggests the term 'systemic value': "duties arise in encounter with the system that projects and protects these member components in biotic community."[16] Hence the 'systemic value' of an ecosystem is derived from the contribution of species interdependencies and associated physical processes to the flourishing of the individual organisms that comprise the ecosystem.

But to what extent does systemic value equate to intrinsic value? Rolston suggests that they are not the same, given that the value of an ecosystem is derived from the individuals it benefits. However, if intrinsic value is taken to mean 'independent of human valuation', then it seems that systemic value must be intrinsic, because a particular ecosystem will be 'good' for the flourishing of the organisms that comprise it. Yet, while this value might be intrinsic, it does not follow that ecosystem change will result in a decline in value. Ecosystems undergo changes in population dynamics as a matter of course.[17] These shifts cause some organisms to flourish at the expense of others that might previously have been

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[15] Holmes Rolston, *Conserving Natural Value*, (New York: Columbia University Press, 1994), p. 177.

[16] *Ibid.*, p. 177.

[17] Daniel B. Botkin, *Discordant Harmonies: A New Ecology for the Twenty-First Century*, (New York: Oxford University Press, 1990)

flourishing. So unless there are some objective criteria by which the interests of particular organisms can be elevated above others, there is no reason to believe that there has been a decline in objective value. There are some possible candidates for such criteria. One is sentience, such that if ecosystem change took place that undermined the interests of sentient organisms to a greater extent than non-sentient organisms, then it could be said that there had been a decline in objective value. However, this criterion is inconsistent with the notion that value is held by all living entities. Another possible criterion is provenance. It is held by advocates of biodiversity conservation that introduced species should be removed from natural ecosystems. However, given that their reason for doing so is to conserve biodiversity, the intrinsic value of which has not yet been demonstrated (at least with regard to the third form), the validity of this criterion remains an open question. A third criterion is the abundance of life, which could be measured in a variety of ways, including the number of distinct organisms or the mass of organic matter created. If ecosystem change took place that resulted in a decline in the abundance of life, then it could be said that there had been a decline in objective value. This final criterion is the one that will be applied below.

The question of whether 'systemic' value equates to intrinsic value is of considerable relevance to the question of whether biodiversity has intrinsic value. Biodiversity is generally considered to refer to three primary levels of diversity: the genetic diversity within species populations, the species diversity of ecosystems, and the diversity of ecosystems within a landscape. In each case, the relationship between diversity and the flourishing of individual organisms is analogous to the relationship

described by Rolston between ecosystems and individual organisms. Consequently, while it could be said that biodiversity has intrinsic value, it does not follow that a decline in biodiversity results in a decline in value. The value is derived ultimately from the organisms whose flourishing is affected, for good or bad, by changes in biodiversity, and so a decline in value can only be said to occur if changes in biodiversity cause a decline in the overall flourishing of organisms in the area in question, not just those of a particular species.

It could be argued that, at all levels of biodiversity, there is a proportional relationship between diversity and flourishing. As explained by Kay Milton:

> The more diversity there is, the greater the chance that some life forms will be able to adapt to changing conditions, and that life itself will continue. In this way, the protection of biodiversity can be seen as safeguarding nature's long-term independence, which is also its autonomy, its capacity for self-realization...[18]

There is scientific consensus that species richness can contribute to ecosystem stability and productivity, and hence also to the flourishing of the organisms comprising the ecosystem. However, such effects can be clearly outweighed by the contributions of particular species, and by factors such as soil fertility and the disturbance regime. For example, Hooper, *et al.*, include the following observations: "cross-system comparisons suggest that abiotic conditions, disturbance regime, and

[18] Kay Milton, *Loving Nature: Towards an Ecology of Emotion*, (London: Routledge, 2002), p. 116.

functional traits of dominant plant species have a greater effect on many ecosystem properties than does plant species richness",[19] and "allometric scaling relationships suggest no relationship between plant diversity and total community biomass across a wide variety of tree-dominated communities".[20] Hence, at the species level it is apparent that while the prevailing biodiversity in a given area might have *potential* intrinsic value, in reality some species will be essentially superfluous to the overall flourishing of life. If they were to disappear, their niches would be filled by other organisms with no apparent decline in stability or productivity. This runs counter to the argument that species diversity has intrinsic value. Instead, only those species populations that have a significant influence on ecosystem dynamics can be said to have intrinsic value of the systemic kind. It is not biodiversity that has intrinsic value but keystone species. Nicolas Agar reaches a similar conclusion, noting that "if a population is especially important to ecosystemic health, then its members should also be viewed as more valuable. Individuals belonging to other species will depend disproportionately on them."[21]

At the level of genetic diversity we arrive at a similar conclusion. Although limited genetic diversity within a species population can have negative consequences for the flourishing of the organisms comprising that population, other organisms within the same ecosystem may well benefit from these negative consequences. It is only when a decline in the

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[19] D.U. Hooper, *et al.*, "Effects of Biodiversity on Ecosystem Functioning: A Consensus of Current Knowledge," *Ecological Monographs* 75 (2005): 8.

[20] *Ibid.*, p. 19.

[21] Nicolas Agar, *Life's Intrinsic Value: Science, Ethics, and Nature*, (New York: Columbia University Press, 2001), p. 152.

flourishing of a particular species has negative consequences for the overall flourishing of those organisms that could thrive in a given area that intrinsic value can be said to have declined. Again, it is not biodiversity that has intrinsic value but keystone species.

It would be unproductive to work through this reasoning for the ecosystem level of diversity as it is simply too difficult to distinguish the influence of ecosystem diversity on the flourishing of individuals from the influence of species diversity. However, there is no reason to suspect that the outcome could be any different.

Extending this discussion beyond the consideration of species, ecosystems and biodiversity, it is apparent that anything that increases the overall flourishing of living organisms can be said to give rise to an increase in intrinsic value. Consequently, while biodiversity might have potential intrinsic value, decline in biodiversity might be offset by human actions that bring about an increase in the overall flourishing of living organisms. For example, this could be achieved in many instances by the addition of nutrients combined with regular small-scale disturbance to promote new growth and highly productive pioneer species. Such actions are likely to be incompatible with most biodiversity conservation and restoration projects. Proponents of the latter might argue that, in the long term, the flourishing of individual organisms in a given area, and the maximising of potential future intrinsic value, requires the conservation of biodiversity. Yet, while this might be the case for areas where intensive management would be impractical, it is not necessarily the case where a concerted effort can be made to artificially intensify flourishing, such as by adding nutrients or water to parched, infertile land.

The prospect that intrinsic value might be more readily increased through actions that are incompatible with the conservation of biodiversity raises the issue of the importance of 'naturalness' for claims that biodiversity has intrinsic value. Introduced species and artificial genetic material are rarely considered to be components of biodiversity that warrant conservation. As observed by Paul Angermeier, although conservation biologists:

> believe that biotic diversity, ecological complexity, and evolution are intrinsically good... [it] is not diversity, complexity, and evolution, per se, that warrant conservation, but *natural* components and levels of diversity and complexity and *natural* rates of evolution. The cornerstone value judgment of conservation is that naturally evolved biotic elements – genomes, communities, landscapes – are fundamentally more valuable than artificial ones.[22]

Without relating naturalness to the definition of biodiversity it is feasible that introduced species and genetically modified organisms could be assigned equal value to 'natural' species.[23] It has been suggested that this limitation of the concept of biodiversity justifies support for the rival

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[22] Paul L. Angermeier, "The Natural Imperative for Biological Conservation," *Conservation Biology* 14 (2000): 377.

[23] The range of views on this issue are discussed by Julia Koricheva and Helena Siipi, "The Phenomenon of Biodiversity," in *Philosophy and Biodiversity*, ed. Markku Oksanen and Juhani Pietarinen (Cambridge: Cambridge University Press, 2004), pp. 27-53.

concept of biological integrity.[24] Alan Holland employs a similar argument in favour of the related concept of ecological integrity, noting that "the special virtue of the principle of integrity, for an environmentalist, is that it clearly and unambiguously defends nature in its own right – the idea of nature going its own way."[25] It could be argued that, although the definition of biodiversity does not explicitly refer to naturalness, acknowledgement of its intrinsic value implies a focus on the 'natural', as it is within intact, remnant ecosystems that constituent species have the greatest chance of long-term survival.[26] But this claim is disputed by various authors. Kate Rawles, for example, suggests that even if non-native species could be shown to contribute positively to local biodiversity, conservationists would oppose their introduction.[27] Similarly, Mark Sagoff argues that there are many examples of introduced species that have not had a detrimental effect on native biodiversity, and that proponents of biodiversity conservation implicitly restrict the meaning of 'biodiversity' to

[24] Paul L. Angermeier and James R. Karr, "Biological Integrity versus Biological Diversity as Policy Directives," *BioScience* 44 (1994): 692-94.

[25] Alan Holland, "Ecological Integrity and the Darwinian Paradigm," in *Ecological Integrity: Integrating Environment, Conservation, and Health*, ed. David Pimentel, Laura Westra and Reed F. Noss, (Washington, DC: Island Press, 2000), p. 56.

[26] Ian R. Swingland, "Biodiversity, Definition Of," in *Encyclopedia of Biodiversity*, volume one, ed. Simon Asher Levin (San Diego: Academic Press, 2001), pp. 385-86.

[27] Kate Rawles, "Biological Diversity and Conservation Policy," in *Philosophy and Biodiversity*, ed. Markku Oksanen and Juhani Pietarinen (Cambridge: Cambridge University Press, 2004), pp. 205-8.

what they consider to be 'natural' for unstated, subjective reasons.[28] In this regard 'biodiversity' is no different from other ecological concepts, such as 'ecosystem health' and 'stability', whose definition and usage is greatly influenced by the unstated values of those employing them.[29] Daniel Simberloff counters Sagoff's primary argument with evidence that introduced species do lead to local extinctions of native species, although he does not dispute the notion that ecologists bring to their work a subjective concern for naturalness.[30] The significance of the value of naturalness is discussed in the next chapter.

Proceeding from the basis that intrinsic value can be located in nature, this investigation has found that biodiversity can only be said to have potential intrinsic value, derived from its contribution to the flourishing of individual organisms. It is only within individuals that intrinsic value can

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[28] Mark Sagoff, "Do Non-Native Species Threaten the Natural Environment?" *Journal of Agricultural and Environmental Ethics* 18 (2005): 228-30.

[29] See, for example, K.S. Shrader-Frechette and Earl D. McCoy, "How the Tail Wags the Dog: How Value Judgments Determine Ecological Science," *Environmental Values* 3 (1994): 107-20; J. Baird Callicott, "The Value of Ecosystem Health," *Environmental Values* 4 (1995): 345-61; R. Bruce Hull, David Richert, Erin Seekamp, David Robertson and Gregory J. Buhyoff, "Understandings of Environmental Quality: Ambiguities and Values Held by Environmental Professionals," *Environmental Management* 31 (2003): 1-13; Morgan M. Robertson, "The Nature That Capital Can See: Science, State, and Market in the Commodification of Ecosystem Services," *Environment and Planning D: Society and Space* 24 (2006): 367-87; Ben Ridder, "The Naturalness versus Wildness Debate: Ambiguity, Inconsistency, and Unattainable Objectivity," *Restoration Ecology* 15 (2007): in press.

[30] Daniel Simberloff, "Non-Native Species *Do* Threaten the Natural Environment," *Journal of Agricultural and Environmental Ethics* 18 (2005): 595-607.

be said to lodge. The argument that biodiversity be conserved because of its (potential) intrinsic value should not be presented without acknowledging that other actions might also contribute to the flourishing of individual organisms. These include actions that are incompatible with the conservation of biodiversity, which renders the intrinsic value argument problematic for those who would promote it. However, this was already the case given that 'objective value independent of human valuation' should be derived from individual organisms; a view that conflicts with the tendency for advocates of biodiversity conservation to value biodiversity, and collective entities such as species and ecosystems, more highly than individual organisms (as discussed in chapter ten).

III. THE INTRINSIC VALUE OF NONHUMAN LIFE

It is a possibility worth considering that when it is claimed that biodiversity has intrinsic value, the actual target of concern is something else for which 'biodiversity' is a convenient label. Two possibilities are discussed here. The first is that rare species and ecosystems are of primary concern, and the second is that 'biodiversity' is employed to refer to nonhuman life in general.

Given the central place that species extinctions occupy within the environmental conscience, it is quite probable that for many people the value of biodiversity closely relates to the value of preventing species extinctions, in which case the intrinsic value of biodiversity actually refers to the intrinsic value of species. Similarly, many people express concern regarding the loss of particular ecosystems, the intrinsic value of which

was recently examined. Genetic diversity is not so readily associated with intrinsic values. However, its decline continues to generate concern because it is indicative of population decline, and increases the likelihood that a particular species will succumb to disease or other pressure.

In concluding that ecosystems have intrinsic value, O'Neill suggests that other collective entities, such as species, also hold intrinsic value.[31] However, his difficulties in justifying the intrinsic value of ecosystems also undermine his argument for the intrinsic value of species. In seeking to ground the intrinsic value of species, Agar argues that the intrinsic value of individuals extends to species because in the absence of other members of its own species, an individual organism cannot fulfill one of its most deep-seated life-goals, that being to mate and produce offspring.[32] This argument is unsatisfactory because Agar fails to fully appreciate the implications of the distinction between species and species populations. As Christopher Belshaw observes, a 'species' is an abstract thing and has no bearing on the progress of nonhuman lives, unlike the species population.[33] With this in mind, Agar's argument imparts value not just to the populations of endangered species, but to all species populations that are low, including the populations of common species that happen to be suffering a momentary and localised decline.

In general terms we can say that the intrinsic value of a species population relates both to its systemic value – its value for other species

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[31] O'Neill, "The Varieties of Intrinsic Value," p. 130.

[32] Agar, *Life's Intrinsic Value*, pp. 148-49.

[33] Christopher Belshaw, *Environmental Philosophy: Reason, Nature and Human Concern*, (Chesham: Acumen, 2001), pp. 161-64.

populations and their constituent individuals – and to its contribution to the quality of life of the members of the population. The same arguments apply to species populations that have been presented in relation to species diversity. In consequence, it can be concluded that the intrinsic value of a species population will depend on the extent of its contribution to the overall flourishing of life in the area of its influence, and that a decline in the flourishing of a species population does not necessarily result in an overall decline in intrinsic value.

It is also possible that when people claim biodiversity has intrinsic value they do not necessarily mean 'species', nor are they especially concerned with diversity. They are rather referring to the full spectrum of life that can be misleadingly described by the term 'biodiversity'. This interpretation of the meaning of 'biodiversity' shifts our enquiry from 'the intrinsic value of biodiversity' to 'the intrinsic value of nonhuman life'. A strong case can be made for the intrinsic value of 'nonhuman life' in relation to each of the three forms of intrinsic value identified by O'Neill. With regard to the first, it is apparent that there are many aspects of nonhuman life that people might value 'for themselves', while recognizing that this value is fundamentally subjective. For example, many spiritual values that are associated with nature fit this category,[34] although Allen Putney brings in a variety of other sources of such value, including recreational activity,

[34] See, for example, Darrell A. Posey (ed.), *Cultural and Spiritual Values of Biodiversity*, (Nairobi: United Nations Environment Program, 1999).

cultural tradition and psychological health.[35] As is discussed in chapter seven, perhaps the strongest claim for the intrinsic value of nature relates to the first interpretation. Another significant source of value is the scientific curiosity that can be stimulated by nature, to be discussed below. With regard to the second form of intrinsic value, and as noted above, Fox identifies a number of qualities intrinsic to nonhuman life, such as sentience and autopoiesis, that are said to confer intrinsic value in this sense. With regard to the third form, both O'Neill and Rolston argue that nonhuman life has value that is independent of human valuing on the basis of the interests, or 'goods', that each organism strives for in its struggle to survive and reproduce.[36]

Given that a much stronger case exists for the intrinsic value of nonhuman life (which is frequently but erroneously taken to be the same thing as 'biodiversity'), it seems likely that when people refer to the intrinsic value of biodiversity they are actually making a statement about the intrinsic value of nonhuman life in general. Markku Oksanen reaches a similar conclusion in his review of 'the moral value of biodiversity':

> [For both anthropocentric and ecocentric philosophers] it is not the thing 'biodiversity' that is of ultimate moral value, but its various constituents. The variety is significant for them because they are sentient, conscious or conative beings who are affected by the

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[35] Allen D. Putney, "Introduction: Perspectives on the Values of Protected Areas," in *The Full Value of Parks: From Economics to the Intangible*, ed. David Harmon and Allen D. Putney (Lanham: Rowman & Littlefield, 2003), pp. 3-11.

[36] O'Neill, "The Varieties of Intrinsic Value," pp. 128-31; Rolston, *Conserving Natural Value*, pp. 171-75.

existence or nonexistence of other species. For them biodiversity is an abstraction, deprived of all the organic features that make discussions about their well-being intelligible.[37]

In light of this discussion, it appears that those who claim that the value of biodiversity is independent of human valuation are mistaken. It is more likely that they are either making a broader statement about the intrinsic value of nonhuman life in general, employing a more inclusive interpretation of 'biodiversity' in the process, or they are actually referring to intrinsic value in its subjective form. The most likely source of subjective intrinsic value for biologists is the scientific interest that biodiversity can inspire.

IV. SCIENTIFIC INTEREST IN BIODIVERSITY

One of the most vocal proponents of the conservation of biodiversity, on the basis of the contribution of species richness to ecosystem functioning, has expressed the opinion that "no single feature of the earth's biota is more captivating than its extraordinary taxonomic diversity."[38] This appears to reflect a passion, common to many people who study nature, generated by curiosity and interest in the variety of life. Acknowledging this, the term 'scientific interest' is not meant to suggest an absence of emotion, but instead to clarify that such interest in biodiversity is mediated to a large extent by knowledge.

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[37] Markku Oksanen, "The Moral Value of Biodiversity," *Ambio* 26 (1997): 545.

[38] Shahid Naeem, "Ecosystem Consequences of Biodiversity Loss: The Evolution of a Paradigm," *Ecology* 83 (2002): 1537.

Scientific interest in diversity – the full spectrum of a type of thing, rather than things in isolation – manifests most commonly in the practice of classification. Scientific interest in biological diversity provides an important motivation for the study of natural history, and particularly systematics, which attends to the classification of different kinds of organisms.[39] Of a less academic nature are hobbies like collecting shells, eggs, or orchids,[40] and pursuits including botanizing and birdwatching. The latter appears to attract the greatest number of participants, variously known as 'birdwatchers', 'birders' or 'twitchers'.[41]

Many authors emphasize this particular value. Takacs, for example, observes that an important motivation for biologists to become actively involved in conservation activities is their own curiosity. He cites Peter Brussard: "suppose you were into collecting antique automobiles. You wouldn't sort of stand by passively while these all went off to the car

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[39] Discussion of the underlying motivations for scientific interest in natural history and systematics is provided by Scott Atran, *Cognitive Foundations of Natural History: Towards an Anthropology of Science*, (Cambridge: Cambridge University Press, 1990).

[40] Popular during the late-nineteenth and early-twentieth centuries, egg collecting (oology) has since fallen into disrepute because of increasing concern for the welfare of wild birds. However, shell collecting, and the growing of rare orchids, remain popular pursuits. See, for example, the websites of such organizations as the Conchologists of America (http://www.conchologistsofamerica.org) and the British Shell Collectors' Club (http://www.britishshellclub.org.uk). See also Eric Hansen, *Orchid Fever: A Horticultural Tale of Love, Lust, and Lunacy*, (London: Methuen, 2000).

[41] William E. Oddie, *Bill Oddie's Little Black Bird Book*, (London: Robson, 1980); Mark Cocker, *Birders: Tales of a Tribe*, (London: Vintage, 2002); Tim Gallagher, *The Grail Bird: Hot on the Trail of the Ivory-Billed Woodpecker*, (New York: Houghton Mifflin, 2005).

crusher."[42] Similarly Thomas Lovejoy states that "it's no different than when Florence was flooded in the late 1960s and all the art lovers in the world got all upset. It's no different from that at all!"[43] In another forum, Hugh Iltis admits that "like most taxonomists, I am by nature a born collector, first of stamps, then of plants – a botanical adventurer excited by the prospects of finding species no one has ever seen before".[44] Dan Janzen suggests that wild biodiversity is essential for raising "the intellectual quality of life" of those who live in rural areas dominated by crop monocultures.[45] Stephen Jay Gould notes that "like all evolutionary biologists, I treasure nature's bounteous diversity of species (the thought of half a million described species of beetles – and many more yet undescribed – fills me with an awe that can only be called reverent)."[46] Jamie Lorimer describes an interview with an entomologist who explains his desire to investigate obscure species:

> Going out and looking at birds, what is the chance of you finding a new bird for Britain? Or discovering some new bit of bird behaviour that nobody has ever identified before? Where is the exhilaration and the fascination? Get stuck into woodlice or some group of beetles

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[42] Takacs, *The Idea of Biodiversity*, p. 135.

[43] *Ibid.*, p. 137.

[44] Hugh H. Iltis, "Serendipity in the Exploration of Biodiversity," in *Biodiversity*, ed. Edward O. Wilson (Washington, DC: National Academy Press, 1988), p. 99.

[45] Daniel H. Janzen, "The Future of Tropical Ecology," *Annual Review of Ecology and Systematics* 17 (1986): 322.

[46] Stephen Jay Gould, "An Evolutionary Perspective on Strengths, Fallacies, and Confusions in the Concept of Native Plants," *Arnoldia* 58 (1998): 18.

and you are making world discoveries. That is much more interesting.[47]

Nigel Cooper suggests that the intensive management of biodiversity reserves in Britain, which is justified by the need to promote particular desired species over others, is inspired to a large degree by the human desire to classify and collect.[48] Steven Trudgill and Emily Brady emphasise a similar point in observing that part of the attraction of biodiversity is that people prefer diversity to monotony.[49]

Scientific interest in diversity constitutes an aesthetic that is independent of beauty. The development of this aesthetic through the nineteenth century is briefly described by Eugene Hargrove.[50] In their classic text, *Extinction*, Paul and Anne Ehrlich note that species have "a second kind of beauty, a beauty of interest, which, even more than conventional beauty, develops in the eye of the beholder."[51] Callicott has compiled Aldo Leopold's thoughts regarding what he called the 'land aesthetic', which was similarly

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[47] Jamie Lorimer, "What About the Nematodes? Taxonomic Partialities in the Scope of UK Biodiversity Conservation," *Social & Cultural Geography* 7 (2006): 553.

[48] Nigel S. Cooper "How Natural is a Nature Reserve?: An Ideological Study of British Nature Conservation Landscapes," *Biodiversity and Conservation* 9 (2000):1134-38.

[49] Steven Trudgill, *The Terrestrial Biosphere: Environmental Change, Ecosystem Science, Attitudes and Values*, (Harlow: Pearson Education, 2001), p. 129; Emily Brady, "Aesthetics in Practice: Valuing the Natural World," *Environmental Values* 15 (2006): 285.

[50] Hargrove, *Foundations of Environmental Ethics*, pp. 88-94.

[51] Paul R. Ehrlich and Anne H. Ehrlich, *Extinction: The Causes and Consequences of the Disappearance of Species*, (London: Victor Gollancz, 1982), p. 38.

grounded in scientific and historical knowledge rather than 'merely' beauty.[52] Takacs also points out the connection with aesthetics: "Difference, variety, complexity, heterogeneity, intricacy of individual organisms, organismal interactions, ecological and evolutionary processes: from these spring the enormous aesthetic value biologists derive from biodiversity."[53] However, diversity alone is not of particular value, at least in most contexts. Dan Perlman and Glenn Adelson note that "of the features that we pay attention to, there are many whose diversity we value and others whose diversity we actively disvalue. The choice of which features to pay attention to and which diversities to value is one that derives from the values and goals of individuals."[54] Gordon Orians suggests something similar in his comments regarding the aesthetics of biodiversity, and also reiterates the particular aesthetic sensibilities of scientists:

> Although people are strongly attracted to living organisms, it is less clear that the attractiveness of an environment is consistently positively correlated with the number of species in it. On the one hand, for example, the most highly evolved garden traditions – European formal gardens and Japanese gardens – are based on just a few species of woody plants. Landscape designers generally do not

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[52] Hargrove, *Foundations of Environmental Ethics*, pp. 88-94; J. Baird Callicott, "The Land Aesthetic," *Environmental Review* 7 (1983): 345-358.

[53] Takacs, *The Idea of Biodiversity*, p. 275.

[54] Dan L. Perlman and Glenn Adelson, *Biodiversity: Exploring Values and Priorities in Conservation*, (Cambridge: Blackwell Science, 1997), p. 56.

like the gardens of botanists because they are cluttered up with too many species![55]

The greatest shortcoming of this value of biodiversity is its limited appeal. Intellectual interest in any form of diversity, be it cars, stamps, vinyl records, or orchids, although passionate and widespread, is not exactly mainstream. Few would agree with Naeem's comment, referred to above, that the most 'captivating' aspect of life on earth is its diversity. On the basis of numerous attitudinal surveys, Stephen Kellert concludes that:

> ...most Americans remain fixed on a narrow segment of the biotic community – largely vertebrate animals, particularly creatures of special historical, cultural, and aesthetic significance... A person's willingness to grant species ethical standing or other positive values appears to depend on the presumption of the species' sentience, intelligence, and behavioral features reminiscent of human experience.[56]

While most people would find species diversity interesting when visiting a zoo or watching a nature documentary, it seems probable that the level of interest in diversity is low in comparison with the interest in particular species. Although greater knowledge about less well known and appreciated species can increase the interest of the average person in such

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[55] Gordon H. Orians, "Aesthetic Factors," in *Encyclopedia of Biodiversity, Volume One*, ed. Simon Asher Levin (San Diego: Academic Press, 2001), p. 53.

[56] Stephen R. Kellert, *The Value of Life: Biological Diversity and Human Society*, (Washington, DC: Shearwater, 1996), p. 62; see also Takacs, *The Idea of Biodiversity*, pp. 62-64.

species, the actual desire to seek out this knowledge, in the absence of practical benefit, is not mainstream. Harrison, Limb and Burgess suggest that popular fascination with nature tends to focus on species that are 'conspicuous' rather than rare, and that systems for selecting sites for conservation ought to reflect this.[57] Allan Greenbaum suggests that interest in diversity is indicative of an aesthetic of 'disinterested interest', which must be cultivated, and is generally prevalent only among middle-class intellectuals.[58]

Because of the great competition for public attention and government resources in contemporary society, arguments in favor of the conservation of biodiversity must assemble the broadest range of values possible. In the same way that continued funding of railways must be justified by reasons other than the enjoyment of train-spotters, those who would conserve biodiversity must look further than the arousal of their own curiosity. Fortunately, instrumental reasons for protecting biodiversity are also available, although, as noted in chapter two, the disingenuous promotion of such reasons over those that they actually hold dear raises questions about the honesty of scientists making such claims.

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[57] Carolyn Harrison, Melanie Limb and Jacqueline Burgess, "Nature in the City – Popular Values for a Living World," *Journal of Environmental Management* 25 (1987): 360-61.

[58] Allan Greenbaum, "Nature Connoisseurship," *Environmental Values* 14 (2005): 389-407.

V. CONCLUSION

It is apparent that the non-instrumental values of biodiversity, as with the instrumental values, have a range of shortcomings that hinder arguments for the conservation of biodiversity. With all intrinsic value sourced back to the well-being of actual living organisms rather than abstract entities, it must be acknowledged that the value of biodiversity can be independent of human valuing only to the extent that, in any given area, the conservation of diversity benefits more organisms than could be sustained by any other means. This is rarely so, if only because human intervention in natural processes can potentially benefit more organisms, albeit with considerable expenditure of energy and resources.

It is more likely that, when referring to the 'intrinsic value of biodiversity', biologists are actually referring to the subjective feeling that biodiversity is valued for itself, which can be easily confused with objective intrinsic values. This subjective feeling can be traced to a variety of sources, but for biologists the most likely source is the intellectual curiosity that is stimulated by diversity in nature. This is a minority value, and gives rise to the dilemma whereby scientists must promote instrumental reasons for the conservation of biodiversity rather than publicise their own personal motivations. The confusion surrounding the meaning of biodiversity is exacerbated by this tendency to expediency, as greater understanding of the true scope of the values of biodiversity is likely to jeopardise the case that can be made for its protection. Yet it should be recognised that the value of biodiversity is buttressed by the strength of concern that people feel for nonhuman life and nature generally.

Articulating these values occupies Part C of this dissertation, comprising the next four chapters, and commencing with consideration of the values of naturalness and wildness, which are central to the value of nature.

PART C

WHAT ARE THE VALUES ASSOCIATED WITH NATURE?

Chapter Six

THE VALUES OF NATURALNESS

I would say that the thing about beaches that makes them so important to me is their naturalness. They are places that literally have a life of their own, where rhythms of tides and seasons set an agenda that seems to stand outside human time. Events like storms or falls of migrants come at times not of human choosing. Beaches are places where the human frame is dwarfed and where human technology and power are themselves framed. On beaches it seems as if nature has power, and the human capacity to direct is set in context.

W.M. Adams (1996)[1]

I. INTRODUCTION [2]

To determine whether the conservation of biodiversity is compatible with protecting the values associated with nature requires that we now turn our attention to the latter. As is apparent from preceding discussion, the values associated with biodiversity are to some degree dependent on the values associated with nature. In the following chapters, an axiology will

[1] William M. Adams, *Future Nature: A Vision for Conservation*, (London: Earthscan Publications, 1996), p. 3.

[2] Much of the material presented in this chapter can be found in two articles that have been accepted for publication. See Ben Ridder, "The Naturalness versus Wildness Debate: Ambiguity, Inconsistency, and Unattainable Objectivity," *Restoration Ecology* 15 (2007): 8-12; Ben Ridder, "An Exploration of the Value of Naturalness and Wild Nature," *Journal of Agricultural and Environmental Ethics*: in press.

be presented that conceptualises the various non-instrumental values of nature and biodiversity in such a way as to highlight this point. However, first it is necessary to consider the quality of 'naturalness', and the related concepts 'wildness', 'freedom' and 'autonomy', each of which have considerable bearing on our understanding of the value of nature. 'Naturalness' is examined first, and receives a disproportionate share of attention as there are two conflicting interpretations in circulation.

II. THE NATURALNESS OF ELEMENTS OF BIODIVERSITY

In conservation biology, the naturalness of species and ecosystems is assessed relative to historical benchmarks. Living entities whose existence within a particular region was well-established prior to the benchmark date are generally referred to as 'natural', 'native', or 'indigenous'. Species whose existence within a particular region is the result of human actions that were subsequent to this date are generally described as 'unnatural', 'exotic', or 'introduced'.[3] However, despite the strong association between naturalness and the absence of human intervention, these historical benchmarks generally post-date the first wave of human settlement. Brian Czech suggests that such benchmarks represent a compromise between the

[3] It should be noted that, contrary to popular perceptions, most ecosystems are inherently unstable and difficult to define, thereby rendering assessment of their 'naturalness' a problematic exercise. See Mark Sagoff, "Muddle or Muddle Through? Takings Jurisprudence Meets the Endangered Species Act," *William and Mary Law Review* 38 (1997): 825-993. However, for most people, species naturalness is generally assessed at a regional scale, which allows for considerable ecosystem flexibility without an accompanying change in naturalness.

view that naturalness precludes all human intervention and the counterargument that all human actions are themselves natural.[4]

The selection of benchmark dates is an exercise that has important implications for setting conservation priorities. Yet such dates are potentially arbitrary, particularly in places such as Europe where the impact of society on nature has been relatively gradual. The difficulties involved are made clear by George Peterken:

> Take for example the alder, elm-hornbeam and beech woods around the Schleinsee, Germany, which are the legacy of 6500 years of complex interactions between the native vegetation, natural processes and local people... What is the natural woodland of this region? Is it the mixed woodland of hazel, elm, lime, oak and ash trees which prevailed before people started to influence the structure and composition of the forest, or is it the hypothetical woodland which would develop if the whole catchment were set aside as a non-intervention reserve?[5]

As explained by Czech, the advent on industrialisation is generally deemed to be more significant than other potential benchmark dates:

> All preceding human economy paled in scale and ecological significance... to that engendered by industrial technology in the

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[4] Brian Czech, "A Chronological Frame of Reference for Ecological Integrity and Natural Conditions," *Natural Resources Journal* 44 (2004): 1122.

[5] George F. Peterken, *Natural Woodland: Ecology and Conservation in Northern Temperate Regions*, (Cambridge: Cambridge University Press, 1996), pp. 12-13.

> eighteenth and nineteenth centuries. Industrialization was characterized by a rapid increase in economic production and consumption to a level several orders of magnitude higher than pre-industrial levels. This economic transformation constitutes a non-arbitrary, fundamental shift in the relationship of humans to their environment and is therefore a logical selection for an endpoint of natural conditions.[6]

However, despite Czech's confident assertion, there does not seem to be any objective reason for choosing industrialisation over other significant breaks in ecological history. Although the ecological impact of industrial technology has been considerable, it has not always been unprecedented; for many species and ecosystems the influence of earlier episodes of human activity was more influential.[7]

This is apparent in Australia, where the generally accepted date against which the naturalness of vegetation condition is assessed is 1750.[8] Although the profound impact of human activities on nature after 1750 is undeniable, there is general consensus that Aboriginal hunting and use of fire also gave rise to considerable change in the Australian environment,

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[6] Czech, "A Chronological Frame of Reference," pp. 1123-24.

[7] Malcolm Hunter, "Benchmarks for Managing Ecosystems: Are Human Activities Natural?" *Conservation Biology* 10 (1996): 695-97; Charles E. Kay and Randy T. Simmons (eds.), *Wilderness and Political Ecology: Aboriginal Influences and the Original State of Nature*, (Salt Lake City: University of Utah Press, 2002).

[8] Ian Oliver, Peter L. Smith, Ian Lunt and David Parkes, "Pre-1750 Vegetation, Naturalness and Vegetation Condition: What Are the Implications for Biodiversity Conservation?" *Ecological Management and Restoration* 3 (2002): 176-78.

commencing with their arrival about 56,000 years ago. In addition, the introduction of dogs to the continent 4 – 5,000 years ago, most likely by fishermen from the north-east of Australia, led to numerous extinctions, including *Thylacinus cynocephalus* (Tasmanian tiger) and *Sarcophilus harrisii* (Tasmanian devil). At the time of European settlement these two species were both found only in Tasmania, which was isolated from the Australian mainland by rising sea levels 8 – 10,000 years ago.[9] Tim Flannery has controversially suggested that some of the ecological elements that should be restored are those that existed not 250 years ago but 60,000 years ago, prior to the arrival of the ancestors of the Aborigines. His proposals include the reintroduction of the Tasmanian devil to mainland Australia, and the introduction of the Komodo dragon (*Varanus komodoensis*) to tropical areas in northern Australia. This large lizard (up to 90 kilograms in weight for males), currently found only on a number of small islands in Indonesia is, "in ecological terms, the closest living species to any of Australia's lost reptilian carnivores."[10] The conclusion must be that Czech's choice of industrialisation as the 'endpoint of natural conditions' is far from 'non-arbitrary'. In fact, it represents the privileging of one historic picture of biodiversity over another.

Eric Higgs suggests that the desire of restorationists to recreate historic ecosystems is motivated by nostalgia, the preservation of narrative

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[9] Don Garden, *Australia, New Zealand, and the Pacific: An Environmental History*, (Santa Barbara: ABC-CLIO, 2005), pp. 12-23.

[10] Tim Fridtjof Flannery, *The Future Eaters: An Ecological History of the Australasian Lands and People*, (Chatswood: Reed Books, 1994), p. 385.

continuity, and sense of place.[11] However, he overlooks a more significant reason, being that the companion goal of 'ecological integrity' will not, by itself, necessarily require the protection of all species. Without historical benchmarks, or with the selection of benchmarks that pre-date the first wave of human migration, conservation strategies would not necessarily consider the fate of species that had adapted to the practices of pre-industrial humans, nor to those ecosystems that reflected this influence.[12] This suggests that the selection of industrialisation as the 'endpoint of natural conditions' primarily reflects the desire to protect biodiversity, which is, after all, the foundation objective of conservation biology. In an influential paper on the role of naturalness in conservation, Paul Angermeier states that "naturalness provides an objective standard by which to judge the permissibility of ecosystem alteration and the appropriateness of conservation efforts."[13] Yet from this discussion it is apparent that, although naturalness defined relative to historical benchmarks is quantifiable, it is certainly not objective.

III. THE NATURALNESS OF PROCESSES

Naturalness as a description of processes is quite dissimilar to naturalness assessed relative to historical biodiversity, particularly as it allows many human artifacts, activities, and attributes to be considered

[11] Eric Higgs, *Nature By Design: People, Natural Process, and Ecological Restoration*, (Cambridge: The MIT Press, 2003), pp. 131-49.

[12] Patrick J. Comer, "A 'Natural' Benchmark For Ecosystem Function," *Conservation Biology* 11 (1997): 301-303.

[13] Paul L. Angermeier, "The Natural Imperative for Biological Conservation," *Conservation Biology* 14 (2000): 379.

natural, or relatively so, without any reference to nature whatsoever. Naturalness of this kind can encompass natural foods and medicines, the natural birth of children, and natural mental or physical abilities, and is highly valued within contemporary Western societies.[14]

There are two main reasons why such things might be described as 'natural'. One is that they are more in harmony with nature than their less-natural counterparts. This factor, for example, was found by Verhoog *et al.* to inform people's perceptions of the naturalness of organic farming.[15] Similarly, it appears to reflect the criteria suggested by Tybirk *et al.* for assessing 'nature quality' on organic farms.[16] Rozin *et al.* also suggest that the preference for natural foods is partly determined by the belief that their production is less damaging to nature.[17] However, this approach to naturalness is quite restricted in scope. Harmony with nature derives its significance from the value attached to nature, which is not relevant in all situations to which the term 'naturalness' can be applied. The naturalness

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[14] See, for example, Paul Rozin, *et al.*, "Natural Preference: Instrumental and Ideational/ Moral Motivation, and the Contrast Between Foods and Medicines," *Appetite* 43 (2004): 147-54. Jennifer Price, "Looking for Nature at the Mall: A Field Guide to the Nature Company," in *Uncommon Ground: Rethinking the Human Place in Nature*, paperback edition, ed. William Cronon (New York: W.W. Norton, 1996), pp. 186-203.

[15] Henk Verhoog, Mirjam Matze, Edith Lammerts Van Beuren and Ton Baars, "The Role of the Concept of the Natural (Naturalness) in Organic Farming," *Journal of Agricultural and Environmental Ethics* 16 (2003): 29-49.

[16] These criteria include 'biodiversity', 'habitat diversity, extent and structure' and 'functional integrity of agro-ecosystems'. See Knud Tybirk, Hugo F. Alrøe and Pia Frederiksen, "Nature Quality in Organic Farming: A Conceptual Analysis of Considerations and Criteria in a European Context," *Journal of Agricultural and Environmental Ethics* 17 (2004): 249-74.

[17] Rozin, *et al.*, "Natural Preference," pp. 147-54.

of 'natural' birth, for example, does not relate to its lower impact on nature, and few would consider the artificial production of vegetable protein in a laboratory to be more natural than organically-grown vegetables simply because it had less impact on nature.

In a review of the meaning of 'naturalness', Mark Woods concluded that "we can understand naturalness to be a relational property that refers to a causal history characterized by nonintentional, ateleological physical, chemical, biological, and evolutionary forces".[18] To these properties we can add 'abstraction', as employed by Freya Mathews when defining nature with reference to:

> the distinction between what happens when things are allowed to unfold in their own way, or run their own course, and what happens when, under the direction of abstract thought, agents intentionally intervene in a course of events to superimpose on it a set of abstractly conceived ends of their own.[19]

As these authors suggest, it is not merely the physical effect of intervention that characterises a decline in naturalness, as many of the effects of human actions can also be generated by processes that are not anthropogenic. It is the 'character' of the intervention that is significant, and the key factor that causes the 'naturalness character' to be diminished is deliberate human intervention.

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[18] Mark Woods, "Ecological Restoration and the Renewal of Wildness and Freedom," in *Recognizing the Autonomy of Nature: Theory and Practice*, ed. Thom Heyd (New York: Columbia University Press, 2005), p. 173.

[19] Freya Mathews, *Reinhabiting Reality: Towards a Recovery of Culture*, (Sydney: University of New South Wales Press, 2005), p. 27.

That naturalness is diminished solely by human actions reflects a fundamental distinction between human and nonhuman consciousness, explained by Peter Carruthers' definition of a 'rational agent', which must:

> be capable of representing in thought a variety of long-term futures, and of making rational choices between those futures. So to count as a rational agent, an animal must not only be capable of acting to satisfy its immediate desires, but also of constructing and following a long term plan... It might be said, then, that plenty of animals should be counted as rational agents. Think of squirrels who store nuts in the autumn, birds who migrate south for the winter or build elaborate nests for the protection of their young... Surely these are all cases of long-term planning? But in fact, to say that an animal engages in behaviour adapted to meet a predictable future eventuality is not to say that the animal has itself predicted that future, or arrived at its behaviour as a result of a plan... For it is left open that the behaviour in question may be merely an acquired habit, or that it may be innately determined.[20]

Carruthers concludes that humans are unique in their capacity to be rational agents, conceding only that although some apes (chimpanzees) are capable of "second-order beliefs about the beliefs and desires of others... this is only a necessary condition of rational agency. It is by no means sufficient."[21] Carruthers' view encapsulates the dualist perspective that

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[20] Peter Carruthers, *The Animals Issue: Moral Theory in Practice*, (Cambridge: Cambridge University Press, 1992), pp. 133-34.

[21] *Ibid.*, p. 139.

humans are fundamentally distinct from other life. This perspective has been associated with the belief that humans are the only entities deserving of ethical consideration, and is frequently challenged on this and other grounds.[22] However, despite these challenges, it seems reasonable to suggest that most people would identify their own capacity for rational thought to be of a different order to that apparent in other life forms. This point is reinforced rather than threatened by studies that identify in certain animals some potential for the type of instrumental behaviour normally associated with humans.[23] Further, as explained by Holmes Rolston, recognition of this difference does not preclude ethical consideration of nature.[24] This is reminiscent of Peter Reed's position that "it is our very *separateness* from the Earth, the gulf between the human and the natural, that makes us want to do right by the Earth."[25]

The naturalness of processes is defined along a continuum; not all processes influenced by humans are unnatural to the same extent. While this continuum might be defined relative to the degree to which the processes are in harmony with nature, a 'non-physical' continuum can be defined relative to the relationship between the individual and society. This

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[22] Kate Soper, *What is Nature? Culture, Politics and the Non-Human*, (Oxford: Blackwell, 1995)

[23] For example, experiments on capuchin and tamarin monkeys have indicated a capacity to use money. See F.B.M. de Waal and J.M. Davis, "Capuchin Cognitive Ecology: Cooperation Based on Projected Returns," *Neuropsychologia* 41 (2003): 221-28.

[24] Holmes Rolston, "The Wilderness Idea Reaffirmed, " *Environmental Professional* 13 (1991): 370-77.

[25] Peter Reed, "Man Apart: An Alternative to the Self-Realization Approach," *Environmental Ethics* 11 (1989): 56.

is apparent in the suggestion that the actions of an individual rational agent in relative isolation from society are more natural than the actions of collective entities. Clearing all the trees on a block of land in order to create a paddock is not a natural process because it is a product of human intention, yet the naturalness of this process can be seen to vary depending on the provenance of the intentions. In one case, the individual felling the trees intends to work the land himself. In another case, the same actions are carried out by an employee of a multinational meat production firm. Although the ecological impact of both might be the same, it is possible to characterise the latter as less-natural. Just as the rational agency exhibited by the average human is of a different order to that apparent in chimpanzees, so is the rational agency exhibited by collective entities such as corporations and government bureaucracies of a different order to that apparent in an individual. The naturalness of technology can be considered in much the same way, with those devices that enable the individual to function relatively autonomously from contemporary society perceived as more natural than those that require the individual to remain highly integrated into society. As observed by Piers Stephens, we perceive naturalness to be diminished by "abstract instrumentalisation". 'Artifacticity' increases as the processes governing the state of a thing or entity incorporate levels of human design and organisation, motivated by the achievement of particular instrumental ends, which are abstracted from direct experience.[26]

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[26] Piers H.G. Stephens, "Nature, Purity, Ontology," *Environmental Values* 9 (2000): 284. This observation emerges from a complex analogy between the

C.S. Lewis observes that naturalness can be explained by the contrast between "what a man wants simply in virtue of being the *kind* of organism he is – and what this or that man learns to want by being luxurious, fanciful, or fashionable."[27] The latter describes a person whose wants have been conditioned to a greater extent by the influence of society. The former, who is considered more natural, retains a greater degree of autonomy from the influence of society. As noted by Richard Lindley:

> Autonomy requires not just that people rationally pursue their not-irrational goals as best they can, but that they actually not be deluded about the nature of their goals, and the consequences of their actions... those in positions of power have strong other-than-truth-centred motives for promoting conformity... There is thus a danger that people will adopt life styles not because they represent truly their best options, but because they have not properly considered alternatives, and are carried along by the force of public opinion, or at least the opinions of influential individuals or groups.[28]

Again, abstract instrumentalism plays a significant role in undermining the autonomy of the individual. The influence of abstract instrumentalism on contemporary life is ubiquitous, through such features of society as centralised decision-making, corporate dominance, ease of information

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naturalness of external nature and the degree to which human perception is mediated by external influences.

[27] C.S. Lewis, *Studies in Words*, Second Edition, (Cambridge: Cambridge University Press, 1967), p. 48.

[28] Richard Lindley, *Autonomy*, (Houndmills: Macmillan Education, 1986), p. 50.

processing, the mass media, and so on. By undermining the autonomy of the individual, these processes all appear highly unnatural.

The significance of individual autonomy recalls the Aristotelian notion of *telos*, which describes the fundamental nature of a thing. As suggested by Burgess and Walsh, "we act unnaturally if we violate the *telos* of animals and plants of other species. We violate their natures."[29] However, it must be recognised that awareness of abstract instrumentalism and *telos* violation is an unavoidably anthropocentric process. The processes used to manufacture a particular brand of breakfast cereal, for example, are not considered 'unnatural' because of a belief that they violate the *telos* of the wheat that comprises the cereal. The process can be considered unnatural, independent of its effect on the wheat, because it is characterised by such things as mass production, advanced technologies, non-local trading networks, corporate efficiency, sophisticated marketing, and the use of the mass media. These instrumental processes are deemed unnatural because they are perceived to violate our own *telos*.

That the naturalness of processes can be considered independent of their physical effects helps to explain why some things can be considered natural without reference to their effect on external nature. For example, the naturalness of 'natural' birth has nothing to do with impacts on nature and everything to do with the relative autonomy of the pregnant woman,

[29] J.A. Burgess and Adrian J. Walsh, "Is Genetic Engineering Wrong, *Per Se*?" *The Journal of Value Inquiry* 32 (1998): 400.

and the newborn baby, from doctors, invasive surgery, industrially-manufactured pharmaceuticals, and other mediations of industrial society.[30]

This also helps to explain the tendency to view human lifestyles as having been more natural in previous eras, and in other less-developed contemporary societies, for these seem to be less subject to the abstract instrumentalism that prevails in our own society. This is, of course, a highly idealised view insofar as the autonomy of individuals in these other societies is, in most cases, likely to be far less than that experienced by ourselves. However, an important distinction is that a greater proportion of the forces serving to undermine their autonomy will be natural or accidental, and consequently 'naturalness' is less likely to be valued.

The naturalness of human actions bears some relation to the notion of 'basic needs'. However, this relationship is not as straightforward as one might think. For example, actions taken to satisfy so-called basic needs cannot simply be described as 'natural'. Contemporary needs theory identifies a distinction between 'needs' and 'satisfiers',[31] and it is apparent that the naturalness of the action taken to satisfy a basic need will depend to a great extent on how the need is satisfied. For example, in satisfying the need to sustain her newborn child, a woman might choose between breast feeding and infant milk formula. The former is obviously the 'natural' choice, despite the cultural pressure exerted by the breast feeding advocacy

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[30] Andrew Brennan, *Thinking About Nature: An Investigation of Nature, Value and Ecology*, (London: Routledge, 1988), p. 91.

[31] Tim Jackson, Wander Jager and Sigrid Stagl, "Beyond Insatiability: Needs Theory, Consumption and Sustainability," in *The Ecological Economics of Consumption*, ed. Lucia A. Reisch and Inge Røpke (Cheltenham: Edward Elgar, 2004), pp. 79-107.

movement, the assistance provided by highly trained lactation consultants, and the associated use of nipple soothing creams, breast pumps and feeding bras. Here the assessment of naturalness is influenced by the understanding that women are biologically endowed for breast feeding, and that such practices pre-date the influence of industrial societies.

Another example is that of food consumption. Eating responds to a basic need for sustenance, but also satisfies various psychological needs.[32] Assessments of the naturalness of eating are influenced by what is eaten and how much is eaten, with 'unnatural' behaviour generally considered to include the over-consumption of food, the consumption of highly processed foods, and various eating disorders, such as anorexia and bulimia. In this context, 'naturalness' refers not to our evolved preference for foods that are high in fat and sugar, but relates to factors that encourage the economical consumption of food. In Western societies, such habits were more prevalent prior to industrialisation, and during times of scarcity, such as the Great Depression, when most people were less affluent than at present, and food availability was more seasonal. Again, it is apparent that the meaning of naturalness is linked to human autonomy from broader society, and is not diminished by the threats to human autonomy from natural forces.

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[32] Ben Fine and Ellen Leopold, *The World of Consumption*, (London: Routledge, 1993)

IV. CLASH OF INTERPRETATIONS

The two interpretations of naturalness described above can both complement and conflict with each other. A complementary relationship is seen in the influence that perception of natural processes has on the definition of historical benchmarks for assessing the naturalness of biodiversity. For example, contrary to Czech, the choice of industrialisation as the benchmark for naturalness might not reflect an objective assessment of the increased ecological impact of industrial societies, but instead the perception that human lifestyles were more natural prior to the Enlightenment. Here, the naturalness of external nature is linked to consideration of factors that conflict with our own inner nature, or *telos*.

Complementary interaction between the two interpretations is also seen in the belief that the most appropriate strategies for managing native biodiversity are those that encourage natural processes. This belief is even expressed by William Jordan, a prominent advocate of human intervention in natural processes to restore historic ecosystems. He notes that the intent of restorationists is "to do what has – *has* – to be done to ensure the survival and well-being of the system, while at the same time *not* controlling it, *not* violating its autonomy, but rather turning it back into itself, into its 'original' freedom and wildness."[33]

The interpretations come into conflict when the conservation of native biodiversity is prioritised over protecting the autonomy of nature from societal forces; in other words, when the naturalness of the biota is

[33] William R. Jordan, "Autonomy, Restoration, and the Law of Nature," in *Recognizing the Autonomy of Nature*, ed. Heyd, p. 203.

protected through unnatural means. One example is the use of genetically modified organisms for conservation purposes. As related by Jack Turner, "some conservation groups, conservation biologists, and government bureaucracies are already considering, or actively pursuing, cloning and gene transfer, believing them to be necessary to achieve conservation goals."[34] He cites the director of the Yellowstone Center for Resources who stated in 2001 that "there is no doubt in my mind that in the next ten to twenty years we will have genetically modified organisms that we can use as tools against non-native species."[35]

Ecological restoration provides another example of the protection of naturalness by unnatural means. Those who advocate restoration have attracted considerable criticism on this basis.[36] In this vein, Rolston suggests that an ecological restoration "is an artifact at the moment that it is deliberately arranged, but it gradually ceases to be so as spontaneous nature returns – but if, and only if, humans back off and let nature take its course."[37] Similarly, Mathews states that "to 'return to nature' is not to restore a set of lost things or attributes, but rather to allow a certain process to begin anew. This is the process that takes over when we step back, when

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[34] Jack Turner, "The Wild and its New Enemies," in *Return of the Wild: The Future of Our National Lands*, ed. Ted Kerasote (Washington, DC: Island Press, 2001), p. 121.

[35] *Ibid.*, p. 122.

[36] See, for example, Jack Turner, *The Abstract Wild*, (Tucson: The University of Arizona Press, 1996); James M. Glover, "Soul of the Wilderness: Can We Stop Trying to Control Nature?" *International Journal of Wilderness* 6 (2000): 4-8; David N. Cole, "Symbolic Values: The Overlooked Values That Make Wilderness Unique," *International Journal of Wilderness* 11 (2005): 10, 23-27.

[37] Holmes Rolston, *Conserving Natural Value*, (New York: Columbia University Press, 1994), p. 92.

we cease intervening and making things over in accordance with our own... designs."[38]

A degree of compromise between the two positions can be seen in the opinion of some authors that 'good' ecological restorations are those that have been organised and carried out by the local community for the benefit of nature rather than by corporations seeking trade-offs for securing development approval.[39] Because they attempt to diminish the influence of abstract instrumentalism, such 'grass roots' restoration activities can be viewed as less-unnatural than the corporate alternative. However, even for community restoration projects, the guiding objective of the exercise is the conservation of global biodiversity, which carries with it an inherently high degree of abstraction and instrumental direction.[40]

Some conservation biologists suggest that the conflict between the interpretations is a product of the ecologically outmoded view that humans and nature are separate. Redefining naturalness to include human actions can give rise to the view, expressed by Povilitis, that "areas with human influence merit the label 'natural' when people do the right things in terms of biodiversity, ecological health, and environmental sustainability."[41] Other conservation biologists acknowledge the connection between naturalness and human action, but then continue to define naturalness with respect to historical benchmarks. Yet, by reinterpreting the process-

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[38] Mathews, *Reinhabiting Reality*, p. 31.

[39] Andrew Light and Eric S. Higgs, "The Politics of Ecological Restoration," *Environmental Ethics* 18 (1996): 241-47.

[40] Turner, *The Abstract Wild*, pp. 107-25.

[41] Tony Povilitis, "What is a Natural Area?" *Natural Areas Journal* 22 (2002): 71.

oriented view of naturalness as a quality defined by physical criteria, human actions compatible with these criteria can themselves be viewed as natural, no matter the degree to which they embody abstract instrumentalism.

Angermeier is one such author who takes this approach. He proposes four criteria for distinguishing between natural and anthropogenic changes to ecosystems, as follows: "(1) degree of change, (2) degree of sustained control, (3) spatial extent of change, and (4) abruptness of change; each criterion is inversely related to naturalness."[42] The absence of explicit reference to human intentions implies that natural and anthropogenic changes can be distinguished solely on the basis of ecological effect rather than the degree of human intention. Czech's choice of industrialization as the 'endpoint of natural conditions' reflects the same reasoning. Yet, although human intentions can give rise to impacts on nature that could not have been generated by natural processes, this is not the case in all instances and in all locations. Even those impacts that can be linked to industrialisation are not necessarily any more damaging to local biodiversity than those that might have occurred in an earlier age, or even naturally.[43] As Elliot Sober points out: "to the degree that 'natural' means anything biologically, it means very little ethically. And, conversely, to the degree that 'natural' is understood as a normative concept, it has very little

[42] Angermeier, "The Natural Imperative for Biological Conservation," p. 375.

[43] Yrjö Haila, "A 'Natural' Benchmark For Ecosystem Function," *Conservation Biology* 11 (1997): 300-301.

to do with biology."[44] The logical outcome of the reasoning employed by Angermeier and Czech is that human impacts are somehow unique, in the same way that the human capacity for rational agency is unique. As Mark Sagoff explains, this notion is deeply flawed:

> The idea that Nature possesses intrinsic ordering principles that human beings can disrupt, moreover, deeply divides ecology from other natural sciences. By analogy, imagine that certain Newtonian laws of motion held only to the extent to which a system had not been impacted by human beings. Suppose, for example, that the gravitational constant applied in pristine places but not to sites debauched by multinational corporations. Suppose raindrops obeyed the Poisson distribution when they fell into naturally occurring cisterns but not into humanmade buckets. We might then speak meaningfully of integrative patterns and principles that account for the direction or tendencies of motion, say, in pristine forests but not in factory farms. In effect, this is how theoretical ecology asks us to think about the biological world.[45]

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[44] Elliot Sober, "Philosophical Problems for Environmentalism," in *The Preservation of Species: The Value of Biological Diversity*, ed. Bryan G. Norton (Princeton: Princeton University Press, 1986), p. 180.

[45] Mark Sagoff, "Ecosystem Design in Historical and Philosophical Context," in *Ecological Integrity: Integrating Environment, Conservation, and Health*, ed. David Pimentel, Laura Westra and Reed F. Noss, (Washington, DC: Island Press, 2000), p. 74.

For these reasons it is not surprising that Angermeier's criteria face difficulties in distinguishing between natural and anthropogenic change.[46] Although he admits that "no single criterion is infallible" as a means of distinguishing between the two, he wrongly implies that the satisfaction of two or more of his criteria would be sufficient to do so. As an example, he explains why the effect of tidal waves would not be classed as an anthropogenic change: "tidal waves can cause large-scale, sudden, and dramatic ecological changes, but they exercise no sustained control over the changes."[47] This claim hinges on the phrase 'sustained control', which appears in his second criteria. 'Control' could be taken to imply human intention, yet he makes it clear that this criterion can include the effects of "dams, introduced species, and severe pollution", which are generally not intentional. Hence he implies that some natural processes *can* be construed as exercising 'sustained control', and while this might not include tidal waves, it could include such 'large-scale, sudden, and dramatic' natural processes as volcanic eruptions and meteor impacts that can cause changes in climate for thousands of years.

The inconsistencies associated with Angermeier's criteria could have been avoided if his stated goal was not to distinguish natural from anthropogenic change, but to identify changes likely to be detrimental to the survival of native species and historic ecosystems. That he has suggested a flawed approach to assessing naturalness reflects a desire to

[46] The inability of different conceptions of naturalness to distinguish between the effects of conservation management strategies of varying intrusiveness is discussed by Helena Siipi, "Naturalness in Biological Conservation," *Journal of Agricultural and Environmental Ethics* 17 (2004): 457-77.

[47] Angermeier, "The Natural Imperative for Biological Conservation," p. 375.

support both interpretations simultaneously without acknowledging the inevitable conflicts that will arise from attempting to reinterpret the process-oriented view of naturalness as a quality defined by physical criteria. Another author who succumbs to this tendency is Andre Clewell, who conveys the impression of rejecting historical references while at the same time stressing that indigenous species be promoted. He suggests that an ecological restoration that does not aim for historical accuracy can be "naturally authentic" because "it self-organizes through natural processes" after restoration activities have ceased.[48] Yet he skirts around the problem that without some measure of attention to history, the restoration of indigenous species might not be emphasised. While Clewell acknowledges that "if one were to create a healthy ecosystem that was entirely lacking in historical authenticity, it could not be designated as *restoration*",[49] he fails to see how this undermines the whole argument that restoration can be consistent with 'natural' processes. Restricting restoration to indigenous species requires that a particular historic period be accorded priority. This in turn will demand particular ongoing management actions, the need for which is inconsistent with 'natural authenticity'. The latter can be achieved if management activities cease once the site has been restored. However, the sensibilities of most conservation biologists are likely to be challenged by subsequent invasions of non-indigenous species, and declining populations of those native species that require the continuation of particular disturbance regimes.

[48] Andre F. Clewell, "Restoring For Natural Authenticity," *Ecological Restoration* 18 (2000): 216.

[49] *Ibid.*, p. 217.

Arising from this discussion is the question of why those who seek to conserve species and ecosystems that are consistent with historical benchmarks should continue to describe their goals in terms of naturalness. Perhaps the most plausible reason is that, because knowledge of the ecological impact of indigenous societies is relatively recent, it has been traditional for species and ecosystems not intentionally influenced by industrialised societies to be described as 'natural'. This tradition has been established, and is reinforced, by the fact that their behaviour is not dictated by human intention, but is self-directed and autonomous. It therefore seems counterintuitive to describe these 'natural' species as 'unnatural' simply because their survival requires some occasional human intervention. Nonetheless, it is misleading for conservation biologists to refer to 'naturalness' in this context given the potential for inconsistency with the mainstream understanding of naturalness as a quality that cannot be enhanced by human intervention.

This discussion of the clash between the two interpretations of naturalness supports the earlier claim that the historical benchmarks interpretation of naturalness reflects prioritisation of the value of biodiversity. It also suggests that the process-oriented interpretation provides the foundation for our understanding of naturalness, while the historical benchmarks interpretation is subsidiary, being grounded in the perception that human influences on nature were more natural in past ages. With these two interpretations of naturalness disentangled to some degree, we must now consider the related concepts 'wildness', 'freedom' and 'autonomy', before moving on to the broader question of the value of nature.

V. WILDNESS

Some of the confusion that surrounds the meaning of 'naturalness' is also apparent when we consider 'wildness'. This term describes behaviour that is instinctive and spontaneous.[50] It is, then, a quality that is diminished by behaviour that reflects the deliberate influence of rational agency, such as when plants are cultivated, or animals are domesticated. A wild animal remains wild even if caged, yet diminishes in wildness when, as a result of being caged, it becomes placid. The meaning shifts slightly in the case of humans. A person's wildness relates to whether or not they are thinking rationally about the results of their actions. Unlike an animal, a crazed and uncontrollable person would not be considered any less wild if their condition was actually caused by having been deliberately poisoned.

This interpretation is contradicted by those who insist that wildness is diminished by the ecological changes resulting from human action. Yet such a perspective confuses wildness with naturalness. This is demonstrated by Gary Snyder's incorrect description of 'wild land' as "a place where the original and potential vegetation and fauna are intact and in full interaction and the landforms are entirely the result of nonhuman forces. Pristine."[51] Such a definition wrongly implies that an area disturbed and then abandoned by humans can never be considered 'wild' unless the species composition and landforms have remained unaltered throughout.

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[50] Woods, "Ecological Restoration," pp. 176-78.

[51] Gary Snyder, *The Practice of the Wild*, (New York: North Point Press, 1990), pp. 9-10.

Snyder is actually describing 'natural' rather than wild land.[52] Much of the ambiguity surrounding wildness emerges when it is used to describe the condition of an area rather than behaviour. An area is wild if the behaviour of the nonhuman inhabitants is wild, in that it does not reflect deliberate human influence. This definition suggests the possibility that many places of high wildness will also have a high degree of naturalness (and vice-versa) and it is this potential for overlap that leads to the mistaken view that the terms are synonymous.

The distinction between wildness and naturalness, as these terms apply to the description of land, hinges on the fact that many human impacts do not cause nonhuman behaviour to become any less spontaneous,[53] and in consequence the land is no less wild. It is his lack of awareness of this point that leads David Graber to insist that any distinction between wildness and naturalness has been rendered moot "by the pervasive and insidious magnitude of human activity."[54] Although unintended anthropogenic processes such as the greenhouse effect will lead to changes in nature, they do not necessarily diminish wildness. Graber clarifies his statement by noting that the risk is to the *appearance* of wildness, which "is in the eye of the beholder: An ecologist or scientifically educated naturalist sees anthropogenic alteration where someone not so schooled

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[52] Snyder avoids using the term 'natural' as he believes it to be imprecise.

[53] Yeuk-Sze Lo, "Natural and Artifactual: Restored Nature As Subject," *Environmental Ethics* 21 (1999): 255-56.

[54] David M. Graber, "Ecological Restoration in Wilderness: Natural Versus Wild in National Park Service Wilderness," *The George Wright Forum* 20 (2003): 38.

does not."[55] But Graber's comments make more sense in relation to the appearance of naturalness. Because wildness is about behaviour, it will generally be difficult to claim that an animal that remains in the wild has somehow become less wild. Naturalness, on the other hand, refers to the extent of human intervention, which will be perceived as more pervasive by the ecologically-aware observer compared with most people.[56]

The view that the loss of large predators in itself causes wildness to diminish can also be explained by the distinction between wildness and the appearance of wildness. As described by Turner: "to come upon a grizzly track is to experience the wild in a most intimate, carnal way... you feel yourself as part of the biological order known as the food chain, perhaps even as part of a meal."[57] This would seem to imply a link between wildness and species loss. However, such a link exists only in relation to the human experience of wildness. Considered purely on the basis of their respective behavioural spontaneity, a grizzly bear is no more wild than a dandelion. Yet in the bear this quality is emphasised by its capacity to attract human attention. Not only does it have a much greater scope for action than the dandelion, but, as Turner acknowledges, it also poses a very real threat to the safety of people who venture into 'bear country'. Although the human experience of wildness – which is closely related to

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[55] *Ibid.*

[56] This distinction between naturalness, wildness, and the appearance of wildness, might help clarify Rolston's vacillation on this issue in relation to the effect of exotic plants on the wildness of Yellowstone National Park. See Holmes Rolston, "Natural and Unnatural: Wild and Cultural," *Western North American Naturalist* 61 (2001): 269-70.

[57] Turner, *The Abstract Wild*, p. 85.

the experience of the sublime – is enhanced by the presence of large predators, it remains that a landscape without large predators can be just as wild.

Another example of the limitations of 'wildness' is in descriptions of the human realm. This is apparent in the following passage from Ned Hettinger and Bill Throop:

> Numerous examples from ordinary life suggest that people do value wildness in a variety of contexts. For instance, admiration of a person's attractive features is likely to diminish when it is learned that they were produced by elective plastic surgery. People prefer the birth of a child without the use of drugs or a Caesarean section, and they do so not just because the former may be more conducive to health. Picking raspberries discovered in a local ravine is preferable to procuring the store-bought commercial variety (and not just because of the beauty of the setting).[58]

It is clear that Hettinger and Throop are not describing wildness, as all the behaviour referred to is deliberate rather than spontaneous. They are instead describing naturalness, as defined by a lack of abstract instrumentalism. When people discuss the merits of beauty without plastic surgery, or childbirth without medical intervention, the term 'natural' would normally be used; prospective mothers would rarely look forward to the prospect of a 'wild' birthing process.

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[58] Ned Hettinger and Bill Throop, "Refocusing Ecocentrism: De-emphasizing Stability and Defending Wildness," *Environmental Ethics* 21 (1999): 12.

Another misleading perspective on wildness is provided by Neil Evernden, who suggests that to acknowledge something as truly wild requires that we must first free ourselves from our preconceptions and abstractions regarding what is natural.[59] In contrast with the meaning outlined above, Evernden considers wildness to be an essential quality of living things that is diminished by human interpretation. The notion that wildness is rarely experienced by adults, and most frequently by small children who have not yet internalised the cultural meanings attached to nature, is not supported by general understanding of the meaning of 'wild'. Although both definitions hold wildness to be an inherent quality of things in nature this is where their similarity ends. More appropriate terms for Evernden include 'otherness' and 'wild otherness', both of which he sometimes uses in the place of 'wildness'.

Barry *et al.*, in their discussion of a wildness mapping exercise, point out that wildness was only chosen over naturalness "to circumvent the problems inherent in the idea of naturalness."[60] Yet it should now be clear that while the use of wildness in place of naturalness might avoid some of the cultural baggage of the latter, making this substitution cannot alleviate all conceptual difficulties. To employ 'wildness' in a logically consistent way requires a thorough understanding of the complexities and values surrounding both terms.

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[59] Neil Evernden, *The Social Creation of Nature*, (Baltimore: Johns Hopkins University Press, 1992), pp. 107-15.

[60] Glen R. Barry, Thomas P. Rooney, Stephen J. Ventura and Donald M. Waller, "Evaluation of Biodiversity Value Based on Wildness: A Study of the Western Northwoods, Upper Great Lakes, USA," *Natural Areas Journal* 21 (2001): 230.

VI. AUTONOMY AND FREEDOM

Another term used to describe naturalness is 'autonomy'. This has recently gained prominence through the publication of a collection of papers, edited by Thomas Heyd, entitled *Recognizing the Autonomy of Nature.*[61] In this book the most prevalent interpretation of 'autonomy' as it applies to nature is that it describes the independence of nature from human abstractions and expectations. This is expressed in most detail by Keekok Lee:

> what has come into existence, continues to exist, and finally, disintegrates/decays, thereby going out of existence, in principle, entirely independent of human volition or intentionality, of human control, manipulation, or intervention. Its existence is independent not only of humankind but also of gods/supernatural entities. It is self-sustaining and self-generating.[62]

Hettinger softens the emphasis on independence in his contribution, noting that "autonomy is a form of independence that is distinct from absolute independence... Respecting the autonomy of others does not mean avoiding interaction or influence on them. What respect for autonomy requires is that one not dominate or control the other."[63] Although Woods

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[61] A review of this book by the author will soon be published in the journal *Environmental Ethics*.

[62] Keekok Lee, "Is Nature Autonomous?" in *Recognizing the Autonomy of Nature*, ed. Heyd, p. 59.

[63] Ned Hettinger, "Respecting Nature's Autonomy in Relationship with Humanity," in *Recognizing the Autonomy of Nature*, ed. Heyd, p. 89.

suggests that the autonomy of nature is essentially the same as 'wildness',[64] it is possible to discern a difference in emphasis between the two. In relation to nature, wildness and autonomy are both the product of an absence of rational agency, but whereas 'wildness' places emphasis on the spontaneity of nonhuman intentions, 'autonomy' emphasises the degree to which nonhuman entities are unable to internalise human intentions, thereby explicitly distinguishing human and nonhuman consciousness.

Another interpretation of 'the autonomy of nature' presented in Heyd's edited collection is that it describes the capacity of things in nature to persist through time. This capacity for persistence is not specifically tied to human influence, which allows William Throop and Beth Vickers to observe that the autonomy of ecosystems can be undermined by natural processes, such as volcanoes.[65] A similar conception of autonomy as it applies to nature leads William Jordan to comment that "the best way to respect the autonomy of a tallgrass prairie is to burn it at irregular intervals..."[66] While such authors are at their liberty to interpret 'autonomy' in this way there are two arguments against it. The first is that it is counter-intuitive that 'autonomy' as it applies to nature should not emphasise such themes as self-rule and independence from external influences. Jordan justifies his shift away from these themes by explaining

[64] Woods, "Ecological Restoration," p. 177. William Cronon makes a similar point, noting that the autonomy of nature is "an autonomy our culture has taught us to label with the word 'wild'." See William Cronon, "The Trouble With Wilderness," in *Uncommon Ground*, ed. Cronon, p. 89.

[65] William Throop and Beth Vickers, "Autonomy and Agriculture," in *Recognizing the Autonomy of Nature*, ed. Heyd, p. 106.

[66] William R. Jordan, "Autonomy, Restoration, and the Law of Nature," in *Recognizing the Autonomy of Nature*, ed. Heyd, p. 199.

that nothing in nature, including humans, can be truly autonomous, because we are all ecologically interdependent.[67] Yet this is misleading. While all life on the planet may be, to varying degrees, interdependent, it is still the case that nature is, in a very important sense, independent from the influence of human intentions. Although Jordan does acknowledge this independence, he considers it to be of secondary importance at best, with his principal concerns being species preservation and the survival of historic ecosystems.[68] The second argument against reinterpreting autonomy in this way is that the term 'ecological integrity' is already in use to describe the capacity of things in nature to persist through time. Such concepts take into account ecological interdependence and allow for human intervention in cases where species and ecosystems are unable to persist through time naturally; exactly the meaning Jordan was seeking in his manipulation of 'autonomy'.

Another term sometimes employed to describe nature is 'free'. Arne Naess, for example, in one of the core texts of deep ecology, frequently refers to 'free nature', by which he appears to mean something similar to 'wild nature' or 'autonomous nature'.[69] However, Woods disputes this interpretation:

> Although a number of people describe wildness as a form of freedom... freedom importantly is distinct from wildness... what is wild becomes civilized to the degree that it internalizes civilized and

[67] *Ibid.*, p. 198.

[68] *Ibid.*, pp. 193-94.

[69] Arne Naess (translated by David Rothenberg), *Ecology, Community and Lifestyle*, (Cambridge: Cambridge University Press, 1989).

other-willed forces, and what is free becomes confined or imprisoned to the degree that external constraints force it to conform to prescribed limits.[70]

This distinction is apparent in the example of the caged, wild animal provided earlier. Although this animal can still be considered wild, Woods suggests that it cannot be said to be free.

In light of this review of the terms 'naturalness', 'wildness', 'autonomy' and 'freedom', it is apparent that all refer to behaviour that is self-directed rather than having been influenced by abstract intentions. In the following section a number of explanations are reviewed for why the 'self-directedness' of nature is of such value in contemporary western society.

VII. THE VALUE OF NATURAL PROCESSES

Many authors have suggested reasons for the reverence accorded to autonomous nature. A great many more have acknowledged the value of the spontaneity and autonomy of nature but have not extended themselves to explaining why. The struggle to grasp the source of this value is apparent in Simon Hailwood's otherwise comprehensive enquiry into 'nature's otherness'. He acknowledges his shortcoming to some extent, conceding that he could be called to account with the comment that "at least he [Robert Goodin] tries to explain why naturalness confers value, which is more than you do for nature's otherness!"[71] His response is "to treat as a given that nature is valuable in virtue of its otherness: a given to

[70] Woods, "Ecological Restoration," pp. 177-78.

[71] Goodin's position is clarified below.

be clarified and its affinity with liberal political philosophy to be established."[72] Yet as it turns out, clarification does not actually include explanation for why he does treat this value as a given.

One approach taken in explaining this source of value is to hold that humans should respect the autonomy of nature as a moral imperative, much as they should respect the autonomy of other humans. This is exemplified by Eric Katz, who states that the loss of value resulting from human intervention in nature results from denial of "the autonomy, the self-realization, of natural nonhuman entities"; freedoms they deserve on the basis of their intrinsic moral considerability.[73] Similar ideas are expressed by Thomas Heyd, who claims that "when we *do* hold something as valuable for itself, and consequently as a candidate for moral consideration, we are doing it, among other things, *in virtue of our recognition of its autonomy*."[74] It can be inferred from such a perspective that an absence of human intervention has value as an expression of the appropriate human relationship with nature. Without denying the moral considerability of nature, explaining the value of naturalness in this way seems unsatisfactory as it precludes consideration of human motivations and requires that the explanation be founded instead on values independent of human feelings. Further, it is of little help in explaining the naturalness of things, such as natural childbirth and medicines, that bear no relation to external nature.

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[72] Simon Hailwood, *How To Be a Green Liberal: Nature, Value and Liberal Philosophy*, (Chesham: Acumen, 2004), p. 28.

[73] Eric Katz, *Nature as Subject: Human Obligation and the Natural Community*, (Lanham: Rowman & Littlefield, 1997), p. 115.

[74] Thomas Heyd, "Introduction," in *Recognizing the Autonomy of Nature*, ed. Heyd, pp. 5-6.

Of those who do consider human motivations, the dominant approach has been to associate the value of nature with its encapsulation of some larger-than-human context. Within the Enlightenment tradition, an early articulation of this view was expressed by the nineteenth century philosopher, John Stuart Mill, who described a feeling of:

> astonishment, rising into awe, which is inspired... by any of the greater natural phenomena. A hurricane; a mountain precipice; the desert; the ocean, either agitated or at rest; the solar system, and the great cosmic forces which hold it together; the boundless firmament, and to an educated mind any single star; excite feelings which make all human enterprises and powers appear so insignificant...[75]

More recently, in one of the early issues of *Environmental Ethics*, Kenneth Simonsen posed the question: "What is inherently valuable about wild nature? Why should wildness elicit delight, astonishment, and awe?"[76] His answer was directed specifically to the atheist/non-believer, who

> is confronted with a natural world which has come into existence on its own, and not in accordance with the design of an intelligent creature. He cannot enter into this world, as he can the world of human fabrication. There is, therefore, something astonishing in this

[75] However, Mill dismisses this feeling as just that. He believes it to be a purely emotive response and therefore has no bearing on the consideration of morality. See John Stuart Mill, *Three Essays on Religion: Nature, The Utility of Religion, and Theism*, (Westmead: Gregg International Publishers, 1969), p. 26. Mill's essay on nature was written some time during the 1850s.

[76] Kenneth H. Simonsen, "The Value of Wildness," *Environmental Ethics* 3 (1981): 259.

> world which has been brought into being by obscure if not blind forces.[77]

Similarly, both Eugene Hargrove and Robert Elliot assert that humans have a duty to preserve nature, by which they mean the autonomy of nature, because of its aesthetic value. This value they justify on the basis of 'positive aesthetics'; the notion that all natural objects have aesthetic value by virtue of having been created by forces independent of human intention.[78] Hargrove observes that in the Western tradition, the love of nature was historically associated with love for God, and suggests that current attitudes toward the aesthetic value of nature are grounded in these theistic roots.[79] Elliot notes that:

> Humans create artefacts and create their value, and the value of those artefacts disappears when humans disappear. This is not so, however, with nature's aesthetic value. And that it is enduring provides the differentiation that allows us to say that natural aesthetic value is a basis for intrinsic moral value, whereas the aesthetic value of artefacts is not.[80]

For each author it is apparent that the autonomy of nature confers value because it represents something that is above and beyond the human realm, something more ancient and more enduring. This explanation for the value

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[77] *Ibid.*, pp. 262-63.

[78] Eugene C. Hargrove, *Foundations of Environmental Ethics*, (Englewood Cliffs: Prentice Hall, 1989), pp. 177-204; Robert Elliot, *Faking Nature: The Ethics of Environmental Restoration*, (London: Routledge, 1997), pp. 60-73.

[79] Hargrove, *Foundations of Environmental Ethics*, pp. 182-84, 201-202.

[80] Elliot, *Faking Nature*, p. 68.

of autonomous nature is consistent with the 'green theory of value' proposed by Goodin. His explanation is as follows:

> 1) People want to see some sense and pattern to their lives.
>
> 2) That requires, in turn, that their lives be set in some larger context.
>
> 3) The products of natural processes, untouched as they are by human hands, provide precisely that desired context.[81]

Rolston also emphasises a human need "to see their lives in a larger context, as embedded in, surrounded by, evolved out of a sphere of natural creativity that is bigger than we are."[82]

That nature has inherent value because of our respect for the larger context can be disputed on a number of fronts. It seems unlikely that all those who value 'naturalness' – whether it surfaces in their opinions on forest practices, breast size, medical treatments, or food additives – are the sort of people who seek a larger context for their lives in order to generate the sort of meaning once provided by God. For those whose lives are already sufficiently meaningful, other explanations for naturalness are required. It is also unclear why 'nature' should be chosen over other things capable of providing a larger context or evidence of God's creation. As noted by Hailwood, Goodin does not explain:

> why naturalness in particular should confer important value. If a 'larger context' is necessary for the meaningfulness of human life, it does not have to be an independent nature. It could be a landscape

[81] Robert E. Goodin, *Green Political Theory*, (Cambridge: Polity Press, 1992), p. 37.

[82] Rolston, "Natural and Unnatural: Wild and Cultural," p. 275.

> (nature-culture hybrid), or a state, or an economic class... Such 'larger contexts' could involve damaging disregard of independent nature.[83]

Perhaps more importantly, Goodin does not explain why people would choose independent nature over theology, which has provided humans with a larger context throughout much of our existence. In support of Goodin, it could be argued that theology has been rendered irrelevant for many people by the insights of science, and further, that the alternatives to independent nature suggested by Hailwood, and science also, are all tainted by human influence. Yet it remains to be explained why people would seek a larger context that was somehow independent of human influence. Such influence is, after all, an important component of the larger context.

A different explanation for the value of autonomous nature is provided by Bernard Williams, who suggests that it is grounded in fear:

> Human beings have two basic kinds of emotional relations to nature: gratitude and a sense of peace, on the one hand, terror and stimulation on the other... The two kinds of feelings famously find their place in art, in the form of its concern with the beautiful and with the sublime.[84]

In relation to the sublime he goes on to suggest that:

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[83] Hailwood, *How To Be a Green Liberal*, p. 26. It is interesting that in overlooking this counterargument, Goodin leaves himself open to the same criticism that he levels at Roland Inglehart's theory of postmaterialism. See Goodin, *Green Political Theory*, pp. 55-57.

[84] Bernard Williams, *Making Sense of Humanity and Other Philosophical Papers 1982-1993*, (Cambridge: Cambridge University Press, 1995), p. 238.

> An artistic reaffirmation of the separateness and fearfulness of nature became appropriate at the point at which for the first time the prospect of an ever-increasing technical control of it became obvious. If we think in these terms, our sense of restraint in the face of nature, a sense very basic to conservation concerns, will be grounded in a form of fear: a fear not just of the power of nature itself, but what might be called *Promethean fear*, a fear of taking too lightly or inconsiderately our relations to nature... [This fear is based] on a sense of opposition between ourselves and nature, as an old, unbounded and potentially dangerous enemy, which requires respect.[85]

Here Williams seems to be describing a sense of respect for nature. While this could derive from some sort of genetic predisposition, it is more likely that he is describing an evolved cultural response, noting that "a self-conscious concern for preserving nature is not itself a piece of nature: it is an expression of culture."[86] Although it is likely that such sentiments do contribute to contemporary attitudes toward nature, it seems unlikely that this is a central motive for conservationists.

Despite the degree of support for the notion that the autonomy of nature is valued because it is indicative of forces larger than humanity, as an all-encompassing explanation it seems insufficient. Nonetheless, it is no doubt significant for a proportion of the people who value naturalness and, by extension, nature. An alternative explanation is that this value is related in

[85] *Ibid.*, p. 239.

[86] *Ibid.*, p. 237.

some way to a desire for autonomy from abstract instrumentalism. These, and other, sources of the value of nature will be explored in following chapters.

VIII. CONCLUSION

The meaning of each of the terms examined above – naturalness, wildness, autonomy and freedom – relates in some way to the absence of conscious human control. Each of these qualities, although principally naturalness and wildness, has been used to describe processes that lack human control, and the condition of living entities and things in nature that have not been influenced by human control. These interpretations can conflict with one another; an issue that is discussed further in chapter eleven. Existing accounts of the value of these qualities tend to be unsatisfactory, generally ascribing it to raw emotion, the intrinsic value of nature, or a yearning for the meaning provided by a larger context for our lives.

In the next chapter this investigation of the value of naturalness, wildness, and the autonomy of nature will be extended to include consideration of the value of nonhuman life and nature more generally.

Chapter Seven

INHERENT VALUES IN NATURE

Values form a system, perhaps even a 'wild' system, and the task of environmental ethics is to learn our way around the system: precisely to explore and rediscover the connections, the layered contexts from personal to geological, that the traditional search for 'intrinsic values' disconnects.

Anthony Weston (1992) [1]

I. INTRODUCTION

An important continuity among the explanations provided in the previous chapter for the value of naturalness is that they do not relate to values that are purely instrumental, and thus derived through consideration of self-benefit. Instrumental explanations tell us more about the value of things that are sought through the exploitation of naturalness than about the value of naturalness itself. For example, naturalness can provide tourism operators with customers for guided excursions through wildlife reserves, or scientists with baseline conditions for studying the effects of pollution. In these cases, the value of naturalness, and nature, is contingent upon the value of other ends, such as the tourist dollar and scientific knowledge. To examine the question "is the conservation of biodiversity compatible with protecting the values associated with nature?" requires that we identify values associated with nature that are more deeply ingrained within

[1] Anthony Weston, *Toward Better Problems: New Perspectives on Abortion, Animal Rights, the Environment, and Justice* (Philadelphia: Temple University Press, 1992), p. 117.

contemporary Western culture than the purely instrumental. In this and the succeeding chapters we will focus on a category of non-instrumental value known as 'inherent' value.

This chapter is organised into four sections. The first describes what is meant by 'inherent value'. The second discusses in greater depth the prospect that subjective explanations might be provided for inherent values. The third presents several reasons for why the identification of such motives is a worthy objective. Finally, a review of various value classifications proposed by environmental philosophers, sociologists and psychologists is described in the fourth section in order to identify those values that qualify as inherent.

II. INHERENT VALUE

The sensation of valuing something for itself, while recognising that this value is not independent of the process of valuation, is traditionally described by the category of 'inherent' value. Such values are non-instrumental and subjective, in that the sensation of value has not been generated by consideration of instrumental utility, and that it can be explained with reference to the preferences, conscious or unconscious, of the human valuer. As discussed in chapter five, John O'Neill identifies three types of intrinsic value, of which the first is as a synonym for 'non-instrumental value'. The other two are that intrinsic values are associated with the intrinsic qualities of that which is valued, and that intrinsic values

are 'objective', in so far as they are independent of human valuations.[2] It is the first category that is of interest here. One prominent author to employ this interpretation is Eugene Hargrove, who refers to values that, while being anthropocentric, are also intrinsic, in that they encompass things that are "valuable without regard to [their] use."[3] However, the convention among environmental philosophers is to reserve the term 'intrinsic' for values that conform with O'Neill's second and third categories.

'Inherent value' is the term most commonly used to denote values that are subjective and non-instrumental, although there are some who have applied a different interpretation. The standard definition dates from 1945, when C.I. Lewis suggested that intrinsic value was limited to human experiences. Objects could only be valued extrinsically; that is, their value was determined by their relationship to some other thing. However, he acknowledged that some objects "are good in a manner which does not depend upon their being instrumental to any other *object*... though it does depend on a relation, or at least possible relation, of this object to some *subject*."[4] The value of such objects he termed 'inherent' value. Among those who have considered inherent values in relation to nature, some, such as Robin Attfield and Paul Taylor, have endorsed Lewis' interpretation.[5]

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[2] John O'Neill, "The Varieties of Intrinsic Value," *The Monist* 75 (1992): 119-20.

[3] Eugene C. Hargrove, *Foundations of Environmental Ethics*, (Englewood Cliffs: Prentice Hall, 1989), p. 124.

[4] C.I. Lewis, *An Analysis of Knowledge and Valuation*, (LaSalle: Open Court, 1946), p. 390.

[5] Robin Attfield, *The Ethics of Environmental Concern*, second edition, (Athens: University of Georgia Press, 1991), pp. 151-53; Paul W. Taylor, *Respect*

Tom Regan diverges from Lewis with his contention that all 'subjects-of-a-life' have inherent value, thereby dismissing the subjective valuer from the equation.[6]

J. Baird Callicott also employs 'inherent value' in a manner similar to that intended by Lewis. However, he greatly constrains its scope by arguing that the inherent value of nature is derived from the sense of oneness with nature that he believes humans are predisposed to feel by virtue of natural selection, and which is reinforced by an understanding of our ecological interactions with nonhuman nature.[7] In common with Edward Wilson,[8] Callicott tentatively describes this as 'biophilia'.[9] He further believes that other motives for valuing nature, which Lewis would associate with inherent value, actually give rise to instrumental values. He states that natural entities have inherent value only when they "are valued for *themselves*, quite independently from the satisfying aesthetic, religious, or epistemic experiences they may occasion in nature aesthetes, nature worshipers, or natural scientists."[10] Although his 'land ethic' is grounded in the self-interest intrinsic to natural selection, Callicott appears to believe

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for Nature: A Theory of Environmental Ethics, (Princeton: Princeton University Press, 1986), pp. 73-74.

[6] Tom Regan, *The Case for Animal Rights*, (London: Routledge, 1988), pp. 235-48.

[7] J. Baird Callicott, "Intrinsic Value, Quantum Theory, and Environmental Ethics," *Environmental Ethics* 7 (1985): 262-66.

[8] Edward O. Wilson, *Biophilia: The Human Bond with Other Species*, (Cambridge: Harvard University Press, 1984).

[9] J. Baird Callicott, "Non-Anthropocentric Value Theory and Environmental Ethics," *American Philosophy Quarterly* 21 (1984): 299-307.

[10] Callicott, "Intrinsic Value, Quantum Theory, and Environmental Ethics," p. 264.

that this has evolved into an entirely altruistic source of motivation, such that when we experience a sense of kinship with nature, this sense is not consciously associated with the possible benefits of such an attitude.[11] He does not acknowledge that 'satisfying aesthetic, religious, or epistemic experiences' might also be unaccompanied by conscious appreciation of self-benefit, and might, therefore, also deserve the label of 'inherent value'. As Simon Blackburn observes, the desires that comprise our interests are often not our primary objects of concern. Dispassionate consideration of whether an action will be to our advantage, "is in fact often notably absent from our deliberations".[12] Although it will usually be possible to identify some emotional benefit to the valuer resulting from their experience of something valued 'for itself', the sensation of value has not emerged from the conscious consideration of this benefit.[13] It is therefore misleading to describe such a value as 'instrumental' and lump it into the same category that includes the sort of utility calculation that results in one's old, faithful, yet no longer productive horse being sent to the glue factory. As O'Neill

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[11] J. Baird Callicott, "Animal Liberation: A Triangular Affair," *Environmental Ethics* 2 (1980): 325.

[12] Simon Blackburn, *Ruling Passions: A Theory of Practical Reasoning*, (Oxford: Clarendon Press, 1998), p. 142.

[13] Similar points are made by a number of authors. See, for example, Hargrove, *Foundations of Environmental Ethics*, pp. 126-27; Bernard Williams, *Making Sense of Humanity and Other Philosophical Papers 1982-1993*, (Cambridge: Cambridge University Press, 1995), p. 236; Simon Hailwood, *How To Be a Green Liberal: Nature, Value and Liberal Philosophy*, (Chesham: Acumen, 2004), pp. 132-34.

points out, "the assumption that a subjectivist meta-ethics commits one to the view that non-humans have only instrumental value is false."[14]

Akin to 'inherent value' is the notion of 'personal value', as described by Christopher Belshaw. The term was originally coined by Ronald Dworkin to refer specifically to "the subjective value a life has for the person whose life it is".[15] Belshaw extends its meaning to encompass all things valued for their own sake: "I value a walk in the hills while you value an afternoon on the beach; Uncle Tom values military marches while Aunt Hetty values Liberace; and so on."[16] It appears that the scope of 'personal values' is much broader than for inherent values, as the former might well include some that the valuer acknowledges to be derived from the satisfaction of their own preferences. Belshaw notes that there is an important subset of personal values that can be distinguished from the great multitude of 'merely' personal values: "there are reasons for wanting a richer vocabulary when something is valued by many, or when what is valued is not to the person's benefit, or, and especially, when what is valued is, arguably, something that ought to be valued."[17] Perhaps a better way of capturing this distinction is to say that the important subset of personal values includes those things that the individual values for reasons that seem to go deeper than their own personal preferences; they seem objective despite being subjective. It is possible that this appearance of

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[14] O'Neill, "The Varieties of Intrinsic Value," p. 121.

[15] Ronald Dworkin, *Life's Dominion: An Argument About Abortion and Euthanasia*, (London: HarperCollins, 1993), p. 73.

[16] Christopher Belshaw, *Environmental Philosophy: Reason, Nature and Human Concern*, (Chesham: Acumen, 2001), p. 207.

[17] *Ibid.*, p. 208.

depth arises because the individual cannot explain why they value a particular thing, which may lead them to conclude that its value is somehow independent from their own experience of value. As discussed below, this is consistent with inherent value. Another term that has been suggested for subjective, non-instrumental values is 'ingredience value', which is defined by its originator, R.T. Allen, as "the value of something to which we attend for the sake of attending to it – as enjoyable, likeable, interesting, or aesthetically or intellectually satisfying."[18]

Despite the various terms that are available to describe the sensation of subjectively valuing something in nature 'for itself', 'inherent value' has been chosen in preference. Although some, such as Hargrove, have employed 'intrinsic value' in this capacity, the dominant interpretation is at odds with this meaning. 'Personal values' are obviously unsuitable given that they encompass values that are too closely tied to individual preferences, while Allen's term 'ingredience value' has not been adopted because it, and his explanation, do not fit that well in the context of discussions about nature.

III. THE UNDERLYING MOTIVATIONS OF INHERENT VALUE

Sensations of inherent value are grounded in experiences of nature in which conscious assessment of utility is largely absent. This is consistent with the perspective of numerous authors who view human concern for

[18] R.T. Allen, *The Structure of Value*, (Aldershot: Avebury, 1993), p. 26.

nature as being "unconscious", "intuitive", "innate", or "pre-rational".[19] It is reflected in the following passage by Thomas Dunlap:

> people don't risk fines or jail or their lives because something might evolve in the next few million years or because wild land forms our nation's character. Julia Butterfly Hill, for instance, sat 180 feet up in a redwood tree for 738 days, and neither common sense nor her testimony suggested economic or utilitarian motives or even a particularly well-developed intellectual defense of nature or wilderness.[20]

However, despite arising through a largely subconscious process, sensations of inherent value are not random and baseless; there often exists some underlying motivating factor, or factors, that has caused a particular set of circumstances to be valued over another. Nicholas Rescher usefully distinguishes between the 'locus' of value, which in the above example is the redwood tree, and the 'underlying' or 'abstract' value, which is the subconscious, or at least unstated, motivations for why Ms. Hill subjected herself to numerous privations in defence of the redwood tree.[21] This is not to say that all sensations of value respond to an underlying motivation. For example, a person might value something because they have been culturally habituated to do so, or because they are hedonistically

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[19] Peter Hay, *Main Currents in Western Environmental Thought*, (Sydney: University of New South Wales Press, 2002), pp. 2-3.

[20] Thomas R. Dunlap, *Faith in Nature: Environmentalism as Religious Quest*, (Seattle: University of Washington Press, 2004), p. 86.

[21] Nicholas Rescher, *Introduction to Value Theory*, (Englewood Cliffs: Prentice-Hall, 1969), p. 8.

responding to a 'sensory delight'.[22] However, it is possible that plausible underlying motivations can be identified despite the existence of a motive not having been consciously apprehended by the valuer. It is the possible existence of these underlying motivations that renders the category of inherent values of nature worthy of further exploration.

Because inherent values relate to the sensation that something is valued for itself, and that this sensation is dependent, at least in part, on the valuer not having engaged in a conscious assessment of utility, it might seem that if one becomes aware of the underlying motivations then the value can no longer be considered inherent, as the focus of value may have shifted from the thing being valued to satisfaction of the newly discovered underlying motivation. Any attempt to reflect on the experience of value in order to explain the underlying motivations could thereby be deemed an exercise in impoverishment, both for oneself and for any others who are corrupted by such knowledge. This is not a wholly unfounded fear in the event that sensations of inherent value are usurped by a cynical drive to maximise the sensation of value. Yet we are not slaves to instrumentalism. In affluent societies particularly there is no need to reconceive every aspect of life in terms of maximising self benefit. It seems that we are capable, although some more than others, of allowing greater understanding of underlying motivations to enrich our experience of value rather than reduce it to a conscious evaluation of utility.

The possibility that a person might value something for itself on the basis of an underlying motivation of which they are not fully aware has a

[22] Gerald F. Gaus, *Value and Justification: The Foundations of Liberal Theory*, (Cambridge: Cambridge University Press, 1990), p. 218.

profound implication for the category of intrinsic value. The identification of inherent values does not preclude the existence of objective, intrinsic values in nature that exist independently of human valuation.[23] However, it could be argued that the identification of intrinsic value is dependent on sensations of inherent value as it is unlikely that some aspect of nature would be considered to have intrinsic value if it was not already valued inherently.[24] There is also the probability that inherent values can be mistaken for intrinsic values in the event that the valuer is unaware of any underlying explanation that would tie the sensation of value back to their own preferences. In the absence of such an explanation it would be difficult to distinguish the two categories of value. It could be argued that these observations undermine the existence of intrinsic values in nature, which are necessarily independent of human valuing. However, an assured judgment on this issue is beyond the scope of this dissertation.

IV. REASONS FOR IDENTIFYING UNDERLYING MOTIVATIONS

In addition to the enrichment of experience through greater awareness of the motivations underlying values, and the insights made available into the nature of intrinsic value, there are a number of other reasons to pursue

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[23] A similar point is made by Hargrove, *Foundations of Environmental Ethics*, p. 126.

[24] This is reflected in Musschenga's recognition that 'identity-constitutive' reasons provide more powerful motives for action than 'identity-neutral' ones. See Albert W. Musschenga, "Identity-Neutral and Identity-Constitutive Reasons for Preserving Nature," *Journal of Applied Philosophy* 21 (2004): 85.

explanations for our intuitions concerning value. Hargrove points out that such an explanation:

> (1) Is likely to be more convincing and effective than more radical positions, and
>
> (2) even if it is not, it is good sense to determine the justification for our actual intuitions and practices before trying to change them.[25]

With regards to the first point Robert Elliot concurs, suggesting that, within a liberal political system, if one desires the protection of "species, ecosystems and the biosphere" it is important that others be convinced of its value; a project that requires one "to articulate what it is about wild nature that underpins its intrinsic value."[26]

On Hargrove's second point it can be seen that the search for underlying motivations is 'good sense' for a number of reasons. To start with, exerting an influence on popular beliefs is easier if their basis is well understood. A breadth of understanding is also helpful in avoiding the possibility that some aspects of what is to be changed are actually beneficial to one's cause. As Alan Greenbaum observes:

> We have often been told that the current environmental crisis demands that the West overturn aspects of its attitude toward the nonhuman and to resacralise its relationship with nature... Yet... 'nature is already sacred' in Western culture... Indeed, it is precisely

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[25] Hargrove, *Foundations of Environmental Ethics*, p. 167.

[26] Robert Elliot, "Ecology and the Ethics of Environmental Restoration," in *Philosophy and the Natural Environment*, ed. Robin Attfield and Andrew Belsey (Cambridge: Cambridge University Press, 1994), p. 35.

> because nature is sacred in modern Western culture that bearers of modern Western 'high culture' have been especially appalled at the consequences of modern technological and economic dynamics for wild biodiversity, and have in some cases set themselves (at least rhetorically) against Western modernity.[27]

Belshaw makes the similar point that:

> Our recent times are remarkable for our concern with preserving the past and resisting change, and with an increasing worry over the balance between our material and spiritual concerns. Rather than an occasion for gloom, the current widespread concern about the environment should be cause for cautious optimism."[28]

By this reading, radical ecologists would be wise to enquire deeply into the motivations underlying concern for nature lest they be unknowingly undermined during the process of resituating the moral foundations of society.

Two more reasons for the clear articulation of underlying values are provided by Lynn Maguire in relation to the Wildlands Project, which envisages returning a substantial proportion of the area of the United States to natural uses:

First, to be acceptable, proposed actions must support (at least to some extent) these values. Those who aren't clear about what their fundamental

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[27] Allan Greenbaum, "Nature Connoisseurship," *Environmental Values* 14 (2005): 402.

[28] Belshaw, *Environmental Philosophy*, p. 26.

values are have a hard time making consistent judgments about what actions are desirable and an even harder time explaining why they prefer some actions to other alternatives...

A second reason... is that to have any chance of implementing significant portions of The Wildlands Project, individuals and organizations with disparate goals will have to work together to find actions that all can endorse... Even among proponents of The Wildlands Project, there are differences in values and priorities, with some emphasizing spiritual values and ethical obligations and others emphasizing ecosystem services and sustainable human use.[29]

One final point is that ordinary citizens are justified in demanding a full explanation for why drastic changes in the structure and organisation of western societies are sought by environmental activists. Overarching plans for change on this scale are worryingly reminiscent of those prepared by totalitarian governments bent on molding human populations to conform with abstract visions of the ideal society. In light of the tragic history of such activities, the general public have a right to be informed of the full range of values being expressed. [30] The following analysis of inherent

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[29] Lynn A. Maguire, "Science, Values, and Uncertainty: A Critique of the Wildlands Project," in *Environmental Policy and Biodiversity*, ed. R. Edward Grumbine (Washington, DC: Island Press, 1994), p. 268.

[30] For discussion of a number of disturbing examples of state-sponsored societal manipulation see James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*, (New Haven: Yale University Press, 1998). Discussion of the illiberal tendencies of radical environmental groups, including Earth First!, who are closely tied to the establishment of the Wildlands Project, is found in Richard J. Ellis, *The Dark Side of the Left: Illiberal*

values takes place in the hope that it may lead both to greater support for the protection of wild nature, and a tempering of the more undemocratic proposals of some environmental activists.

V. IDENTIFYING INHERENT VALUES

The usefulness of inherent values in contributing to our understanding of why we value nature depends on the plausibility of the explanations that can be suggested for why such values manifest. This involves not venturing down the path of simply asserting that no explanation is required because the values are unconscious, innate, intrinsic or 'spiritual'.[31] The possibility that more satisfying explanations are available is explored here by way of a review of some existing attempts to identify and explain values in nature.

Many lists of natural values and arguments in support of nature preservation are to be found in the literature. Some values are common to all such lists, particularly the distinction between intrinsic value and values variously described as utilitarian, economic, or instrumental. Some authors adopt the terminology developed by economists, referring to existence, bequest and commodity values, among others. Several approaches relevant to consideration of inherent values are described below, followed by discussion of their capacity to explain what it is about nature that satisfies our underlying propensities for attributing value.

In 1995 Warwick Fox presented an environmental axiology that adopts earlier schemes suggested by William Godfrey-Smith in 1979 and John

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Egalitarianism in America, (Lawrence: University Press of Kansas, 1998), pp. 228-270.

[31] See quote by Weston at the beginning of this chapter.

Rodman in 1983.[32] It also benefited from a related project undertaken by George Sessions published in 1992. Fox describes both instrumental and intrinsic approaches to the value of nature, with the former including nine arguments for 'resource preservation'.[33] Another influential taxonomy of values is that proposed by the sociologist Stephen Kellert. His list of nine basic values was developed in conjunction with a large number of attitudinal surveys conducted since 1985 in a variety of countries.[34] Outside of environmental sociology, Kellert's work is known primarily through its association with the biophilia hypothesis.[35] In 1998 Michael Nelson compiled various classification schemes to present twenty-nine arguments for wilderness preservation.[36] Allen Putney briefly describes eleven 'intangible' or 'non-material' values of nature reserves identified by the World Commission on Protected Areas in his introduction to a book on the

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[32] See William Godfrey-Smith, "The Value of Wilderness," *Environmental Ethics* 1 (1979): 309-19; John Rodman, "Four Forms of Ecological Consciousness Reconsidered," in *Ethics and the Environment*, ed. Donald Scherer and Thomas Attig (Englewood Cliffs: Prentice-Hall, 1983), pp. 82-92.

[33] Warwick Fox, *Toward a Transpersonal Ecology: Developing New Foundations for Environmentalism*, (Foxhole: Resurgence, 1995), pp. 149-61; George Sessions, "Ecocentrism, Wilderness, and Global Protection," in *The Wilderness Condition: Essays on Environment and Civilization*, ed. Max Oelschlaeger (Washington, DC: Island Press, 1992), pp. 96-100.

[34] Stephen R. Kellert, *The Value of Life: Biological Diversity and Human Society*, (Washington, DC: Shearwater, 1996), pp. 3-26.

[35] Stephen R. Kellert and Edward O. Wilson (eds.), *The Biophilia Hypothesis*, (Washington, DC: Island Press, 1993).

[36] Michael P. Nelson, "An Amalgamation of Wilderness Preservation Arguments," in *The Great New Wilderness Debate*, ed. J. Baird Callicott and Michael P. Nelson (Athens: University of Georgia Press, 1998), pp. 154-98.

topic published in 2003.[37] A useful discussion of such values is presented by Richard Knopf in the *Handbook of Environmental Psychology*, originally published in 1987.[38]

All of the classification schemes mentioned, except for the contribution by Knopf, feature combinations of purely utilitarian values or arguments, values that blend instrumental and non-instrumental elements, and values that might properly be considered 'inherent'. Some categories are explicitly identified as utilitarian, or are obviously so, like the 'silo' argument identified by Godfrey-Smith, Sessions and Fox, and the 'pharmacopoeia' and 'storage silo' arguments identified by Nelson, which describe the potential value of the genetic diversity found in wilderness areas. Even the typology of intangible values suggested by Putney, which is more explicitly tailored to non-instrumental values, contains two that are distinctly utilitarian: the value of protected areas for 'research and monitoring', and for encouraging international cooperation. While utilitarian arguments and values are easily dismissed from consideration of inherent values, this is not the case for arguments that reflect a mixture of instrumental and non-instrumental elements. Some common examples are the scientific, recreational, and symbolic value of nature, each of which are discussed below.

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[37] Allen D. Putney, "Introduction: Perspectives on the Values of Protected Areas," in *The Full Value of Parks: From Economics to the Intangible*, ed. David Harmon and Allen D. Putney (Lanham: Rowman & Littlefield, 2003), pp. 3-11.

[38] Richard C. Knopf, "Human Behavior, Cognition, and Affect in the Natural Environment," in *Handbook of Environmental Psychology, Volume One*, ed. Daniel Stokols and Irwin Altman (Malabar: Krieger, 1991), pp. 783-825.

The 'laboratory' argument (identified by Godfrey-Smith, Sessions, Fox and Nelson), the 'ecologistic-scientific' value (Kellert), and the 'research and monitoring' value (Putney), describe the value of nature for scientific research. While such research has obvious practical benefits, it also provides many people with a valued intellectual experience, which is acknowledged by Knopf's category of 'nature as diversion'. The value associated with this experience is non-instrumental and fits within the category of inherent value.

The 'gymnasium' argument (Godfrey-Smith, Sessions and Fox), the 'physical therapy' and 'arena' arguments (Nelson), the 'naturalistic' value (Kellert), and 'recreational values' (Putney) describe the value of nature for recreation. Some of these authors emphasise the purely physical benefits of exercising in nature, in which case the value concerned is instrumental as nature is valued only as a location for exercise. Others draw attention to recreation activities that include emotional engagement with nature as an integral part of the experience. Such activities suggest the presence of inherent values.

The 'monument' argument (Sessions and Fox), the 'inspiration', 'national character', 'mythopoetic' arguments (Nelson), 'symbolic' value (Kellert and Knopf), and 'artistic' and 'cultural values' (Putney) describe the value of nature for providing us with culturally significant symbols and metaphors. These are instrumental values in so far as the aspect of nature that constitutes the symbol is valued because the referent is valued. However, this transferral of value will not necessarily be conscious; we may, for example, feel a particular animal to be especially important without acknowledging that this importance stems from it being the

national mascot. As discussed in chapter nine, the capacity of nature to symbolise human freedom, emphasised by both Sessions and Fox, is particularly important.

Other identified values comprising both instrumental and non-instrumental aspects include the value of nature for education, the aesthetic and spiritual value of nature, and the psychological benefits of engaging with nature. Such values may be considered either instrumental or inherent depending not only on which aspect of the value is considered, but also under what circumstances it is experienced. For example, someone might value a certain vista instrumentally in their capacity as a tour group operator, yet inherently, as an aesthetic value, on those occasions after work when they can relax.[39] Making definitive statements about the nature of a value is further complicated by the likelihood that multiple, interacting values may be active in any given situation. These complexities must be recognised in any attempt to describe the motivations underlying sensations of inherent value.

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[39] William Cronon highlights similar distinctions in his identification of the 'uncommon ground' that separates our perceptions of nature from those held by others. See Cronon, "Introduction: In Search of Nature," in *Uncommon Ground: Rethinking the Human Place in Nature*, paperback edition, ed. William Cronon (New York: W.W. Norton, 1996), pp. 23-56.

VI. CONCLUSION

This chapter has taken the question of why we value nature and presented a theoretical framework within which to answer it. The framework is comprised of what have been termed 'inherent values', which are non-instrumental, non-intrinsic values whereby nature is valued for what it is in itself, rather than how it may be used to express or further some other value. A review of several existing studies of environmental values has identified a number of sources of value that qualify as 'inherent', such as the intellectual experience associated with scientific inquiry, the emotional engagement with nature arising from wilderness recreation, and the capacity of nature to symbolise human freedom. In the next chapter, these are incorporated into an 'axiology of inherent value' that will be used to explore the values associated with nature.

Chapter Eight

THE AXIOLOGY OF INHERENT VALUE

I do, in fact, believe that some sense can and should be made of the idea of direct ethical obligations to a wide range of nonhuman natural entities. But I also think that these obligations are extremely hard to articulate, particularly within what might loosely be called a 'rationalist' ethical framework, that is, one which takes itself to appeal only to reason and which eschews appeal to emotion. Arguably, it is a re-evaluation of these kinds of frameworks that is called for here, rather than a limiting of our ethical obligations.

Kate Rawles (2004)[1]

I. INTRODUCTION

An axiology, or theory of value, is proposed in this chapter that describes four motives underlying the subjective, non-instrumental, and inherent values associated with nature. This is followed by discussion of the first three motives, with the fourth considered in chapter nine. The value-oriented decisions arising from these motives can then be compared with the values protected by the conservation of biodiversity to determine the potential for conflict.

[1] Kate Rawles, "Biological Diversity and Conservation Policy," in *Philosophy and Biodiversity*, ed. Markku Oksanen and Juhani Pietarinen (Cambridge: Cambridge University Press, 2004), p. 204.

II. THE AXIOLOGY OF INHERENT VALUE

It is argued here that in contemporary western societies the non-instrumental subjective values experienced in nature can be associated with the following underlying motivations:

MOTIVE ONE	**The experience of connection with nonhuman life.**
MOTIVE TWO	**Intellectual interest in nature.**
MOTIVE THREE	**Respect for the larger context.**
MOTIVE FOUR	**Dissatisfaction with the abstractions of modern society.**

Each of these motives can help to explain the feeling that something in nature, or 'nature' as a whole, is valued 'for itself'. They have been chosen for their capacity to explain the non-instrumental, non-intrinsic values that were identified through review of existing classification systems. However, it must be acknowledged that their explanatory potential can only be realised in combination with each other and the variety of other influences that generate sensations of value. As Anthony Weston explains:

> The idea is to trace the relations of values as a system, thus inter-weaving a complex and varied set of values into a loose pattern, intricate and indeed still in conflict as it may be. Thus we might do for values themselves what the science of ecology does for the multiple forms of life: uncover their organic places within larger

> wholes. Indeed, I propose to call such a project an 'ecology of values.'[2]

Similarly, Kay Milton suggests that:

> The ways in which nature and natural things are valued depend on their emotional impacts, on what they make people feel. And these impacts arise out of a complex developmental process which is unique to every individual and which is constituted partly through social experiences, but also through diverse other experiences of perceptual engagement with nature and natural things.[3]

Although a particular motive might be identified as exerting overwhelming influence on a particular value-orientation, this motive will not be acting alone. Sensations of inherent value in nature might well be influenced by the usefulness of some aspect of nature, and the values associated with various personal meanings and cultural traditions that are bound up with nature. Inherent values in turn support the identification of certain intrinsic values that are ascribed to nature, and belief in these intrinsic values can then have ramifications for attitudes about other aspects of nature and the human relationship with nature.

The pluralism of this approach helps to defuse criticism that can be leveled at universal theories of value of the type proposed by Robert

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[2] Anthony Weston, *Toward Better Problems: New Perspectives on Abortion, Animal Rights, the Environment, and Justice* (Philadelphia: Temple University Press, 1992), p. 115.

[3] Kay Milton, *Loving Nature: Towards an Ecology of Emotion*, (London: Routledge, 2002), p. 111.

Goodin.[4] His 'green theory of value' is founded on the notion that 'naturalness' is desired because it infuses our lives with meaning and purpose. The theory suffers from attempting to explain too much with too little. Despite his frequent assertion that it satisfactorily accounts for all truly green behaviour, there are too many instances where it obviously does not. Goodin explains the discrepancy by suggesting that there are many preferences, exhibited by people who identify themselves as 'green', that are not integral to the green perspective:

> You cannot consistently be a principled green in your personal lifestyle without being a principled green in your policy recommendations. But you can consistently be a principled green in your policy recommendations, grounding them in a properly green theory of value, without necessarily adopting on principle a green personal lifestyle.[5]

This is spurious. Goodin is defining 'a principled green' to be one that conforms to his green theory of value, which renders his argument entirely circular. A more plausible explanation is that Goodin's theory is not comprehensive enough to account for why some environmentalists adopt certain lifestyle habits while others do not. Another example of the limitations of his theory is that Goodin is forced to introduce an accompanying 'green theory of agency' to account for the tendency of

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[4] See, for example, Kate Soper, *What is Nature? Culture, Politics and the Non-Human*, (Oxford: Blackwell, 1995), p. 273.

[5] Robert E. Goodin, *Green Political Theory*, (Cambridge: Polity Press, 1992), p. 80.

environmentalists to advocate egalitarian, decentralised political structures.[6] As his theory of value is unable to account for political preference, which constitutes an important component of a person's value-orientation, his claim that all green values can be explained by a single theory would seem to be undermined. By proposing a variety of motives, and acknowledging the degree of influence from other sources, the axiology of inherent value is better placed to provide the comprehensive explanation for 'green preferences' that Goodin was seeking.

It may be that other authors emphasise motives not included within this axiology, or feel that this simple list is so far removed from the complex reality of human psychology as to be useless. In response to the former I would suggest that this axiology be considered provisional and tentative. It is the product of a single person's attempt to make sense of why the people around him value nature, and is inevitably derived from his own understanding. Others might suggest alternative motives that are just as valid as the four provided here. In response to the latter, I repeat that this is a theoretical exercise and not an empirical one. Its usefulness arises precisely because the distracting complexities that surround real feelings about nature have been generalised to a considerable degree, thereby revealing a small number of key motives associated with sensations of inherent value. During the course of the following chapters it will become apparent that the explanation provided by these four motives, and the axiology as a whole, is a rational one, and appears to account for some of the major fault lines within environmental ethics.

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[6] *Ibid.*, pp. 113-15.

The first three of these motives are discussed in this chapter, and the fourth reserved for the following chapter. However, before we can commence describing the four motives it is necessary to first consider the contribution of unreflective emotion to the generation of sensations of inherent value in nature. This gives rise to an important insight into the relationship between motives and cultural influences.

III. THE EMOTIONAL CONTRIBUTION TO INHERENT VALUE

As discussed in the previous chapter, inherent values in nature have been described by various authors as fundamentally emotive. I have argued that despite this, it is possible to identify subconscious motives that give rise to these emotional sensations of value. However, this is not to say that inherent values are entirely the result of subconscious motives; it remains that they are partly informed by purely emotive and sensual responses to nature. For example, things in nature that command our attention are more likely to be the subject of inherent values than those that do not. Consider the feelings that would be generated by a boulder the size of a house compared with one only as large as a person. The former overwhelms us and is more likely to generate sensations of value simply by virtue of its size. Similarly, creatures or landscapes that are visually stimulating are more likely to attract attention, and sensations of value, than those that are relatively dull. Jamie Lorimer describes these characteristics as related to the 'nonhuman charisma' and 'detectability' of a species, with the latter

describing "how easy a species is for a surveyor to encounter, identify, differentiate and record."[7]

The distinction between these emotional stimuli and the motives that comprise the axiology is reflected in the distinction between primordial and elaborated emotion described by Dacher Keltner and Jonathan Haidt:

> Primordial emotion refers to the relatively hard-wired pre-cultural sets of responses that were shaped by evolution and built into the central and peripheral nervous systems of the human species. Elaborated emotion refers to the full set of culture-specific norms, meanings, and practices that cultures build up around primordial emotions. Primordial disgust, for example, refers to the emotional rejection of foods that either smell like decay or that are known to have come into contact with excrement or other disgust elicitors. Elaborated disgust for modern Americans, however, is a much richer emotion involving the emotional rejection of things based more on ideation than on perceptual qualities (e.g., racists, cheap wine, and political corruption).[8]

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[7] Jamie Lorimer, "What About the Nematodes? Taxonomic Partialities in the Scope of UK Biodiversity Conservation," *Social & Cultural Geography* 7 (2006): 549.

[8] Dacher Keltner and Jonathan Haidt, "Approaching Awe, a Moral, Spiritual, and Aesthetic Emotion," *Cognition and Emotion* 17 (2003): 306. See also Dacher Keltner and Jonathan Haidt, "Social Functions of Emotions," in *Emotions: Current Issues and Future Directions*, ed. Tracy J. Mayne and George A. Bonanno (New York: Guilford Press, 2001), pp. 192-213.

The significance of culture is also apparent in Neil Evernden's explanation for why children are more able to experience something akin to 'primordial emotion':

> Childhood is the one period in life when one is able to experience a world nonculturally, or at least only semiculturally, before the interpretations of society and the craving to belong to that society foreclose such options. It is a 'window of opportunity' that exists before the small human becomes forever a creature of culture and must dwell in the domain of abstractions and representations.[9]

From these descriptions it is apparent that the motives comprising the axiology are rooted in culture. That the motives are subconscious reflects the extent to which culture infuses our lives with meaning. It becomes possible to identify similarities between inherent values in nature, and the reverence of many people for art, religion, celebrities, and so on. In each case, the individual's emotional response when confronted by these phenomena is largely 'elaborated emotion', mediated to a considerable degree by cultural knowledge. However, some components of the experience will have a deeper source. They would appeal on some level to the culturally uninitiated, and in this regard 'primordial emotion' is in play. This perspective is consistent with Allan Greenbaum's theory of 'nature connoiseurship', whereby the tendency to identify intrinsic values in nature is a product of cultural learning. In keeping with the description here of

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[9] Neil Evernden, *The Social Creation of Nature*, (Baltimore: Johns Hopkins University Press, 1992), pp. 113-14.

motives for inherent values that are subconscious and non-instrumental, Greenbaum observes that:

> The love of nature does not appear as a fruit of artificial discipline from within the system of conditionings which gives rise to it. Quite the contrary. The taste for wild nature is an accomplishment, but, as an accomplishment of the habitus it is 'second nature' and perceived as natural.[10]

Some explanation is required for why theories that provide evolutionary or genetic explanations for the human value of nature are not represented within the axiology. Three of these theories in particular might be thought worthy of inclusion given that they describe subconscious motives for valuing nature. One is prospect-refuge theory, which holds that human landscape preferences are partly a product of evolution, with open views (prospect) and opportunities for protection (refuge) having aesthetic value because they enhanced the survival of our distant ancestors.[11] The second is the idea that people such as mountaineers engage in dangerous activities because of a genetic predisposition to demonstrate their fitness and desirability as sexual partners.[12] Because risk increases with distance from the security of society, it is likely that such predispositions encourage the

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[10] Allan Greenbaum, "Nature Connoisseurship," *Environmental Values* 14 (2005): 401.

[11] Jay Appleton, *The Experience of Landscape*, (London: Wiley, 1975)

[12] Geoffrey Miller, *The Mating Mind: How Sexual Choice Shaped the Evolution of Human Nature*, (London: Vintage, 2001), p. 255; Matt Ridley, *Nature Via Nurture: Genes, Experience and What Makes Us Human*, (London: Fourth Estate, 2003), pp. 239-40.

finding of inherent values in nature. The third is the biophilia hypothesis, which suggests that the human attraction to nonhuman life and biodiversity is an evolved preference resulting from the competitive advantage this would have conferred on prehistoric humans.[13] There are two reasons why these influences on human values have not been included within the axiology. First, they are often applicable to only a narrow range of values in nature. Prospect-refuge theory, for example, is limited to explaining the value of particular landscape elements. Second, they are open to considerable dispute as to whether they actually constitute real influences on behaviour, being difficult to conclusively distinguish from cultural norms and traditions. In contrast, the motives described below can each be linked to a wide range of values in nature, and no claim is made to distinguish them from cultural influence.

IV. MOTIVE ONE – CONNECTION WITH NONHUMAN LIFE

The human experience of connection with nonhuman life is a powerful motivation underlying the sensation that aspects of nature are valued for themselves. This connection is grounded in our capacity to empathise with nonhuman life on the basis of shared experience. Our experience of pain, for example, can lead us to condemn cruelty to animals, just as the

[13] J. Baird Callicott, "Non-Anthropocentric Value Theory and Environmental Ethics," *American Philosophy Quarterly* 21 (1984): 299-307; Edward O. Wilson, *Biophilia: The Human Bond with Other Species*, (Cambridge: Harvard University Press, 1984); Stephen R. Kellert and Edward O. Wilson (eds.), *The Biophilia Hypothesis*, (Washington, DC: Island Press, 1993).

experience of crying children might cause us to feel sympathy for a magpie being pursued relentlessly by her squawking offspring. The experience of connection will tend to be felt more strongly for organisms that have physical and behavioural characteristics not dissimilar to our own, as is apparent from the comparatively greater interest in 'charismatic megafauna'.[14] Again, Lorimer's notion of 'nonhuman charisma' is relevant here. Gordon Burghardt and Harold Herzog provide an extensive list of animal characteristics that elicit favourable responses in humans. In addition to human-like features and behaviour they include juvenile features and behaviour (cuteness), large size, old age, rarity, intelligence, behavioural variability between individuals (personality), and the capacity to bond with humans (zoomorphism).[15]

This metaphorical connection is commonly referred to as anthropomorphism, which entails the projection of human qualities onto nonhuman entities.[16] It could reasonably be argued that the idea of animal rights - the formal extension of moral considerability to animals – has its basis in anthropomorphism, particularly with regard to the shared experience of pain.[17] This is certainly the impression conveyed in Peter

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[14] Stephen R. Kellert, *The Value of Life: Biological Diversity and Human Society*, (Washington, DC: Shearwater, 1996), pp. 62, 102, 127-128.

[15] Gordon M. Burghardt and Harold A. Herzog, "Animals, Evolution, and Ethics," in *Perceptions of Animals in American Culture*, ed. R.J. Hoage (Washington, DC: Smithsonian Institution Press, 1989), pp. 129-51.

[16] David B. Morton, Gordon M. Burghardt and Jane A. Smith, "Critical Anthropomorphism, Animal Suffering, and the Ecological Context," *The Hastings Center Report* 20 (1990): 13-19.

[17] This is obversely equivalent to Lawrence C. Becker's observation that 'speciesism' results in part from the greater 'social distance' that exists between

Singer's review of the more sympathetic attitudes toward animals that began to manifest during the eighteenth century. Singer himself is dismissive of the notion that moral considerability should be grounded in sentiment and emotion,[18] yet this perspective denies the influence of emotional response on moral decisions. As observed by Kate Rawles:

> Very many people, on learning that nesting ducks are shot at their most vulnerable, or that the drays of grey squirrels are smashed and their kittens stamped on, and that these actions are performed, not by vandals but conservationists, experience a range of emotions, often powerful ones. Acknowledging and reflecting on these emotions seems to me to constitute a key part of developing an ethical response to such actions.[19]

As explained by James Serpell, "anthropomorphism appears to have its roots in the human capacity for so-called 'reflexive consciousness' – that is, the ability to use self-knowledge, knowledge of what it is like to be a person, to understanding and anticipate the behavior of others."[20] Being grounded in human experience, anthropomorphism is therefore an unsatisfactory foundation for those who identify values in nature that are entirely independent of human valuers, or which are apparent only to those

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ourselves and most nonhuman organisms. See Becker, "The Priority of Human Interests," in *Ethics and Animals*, ed. Harlan B. Miller and William H. Williams (Clifton: Humana Press, 1983), pp. 225-242.

[18] Peter Singer, *Animal Liberation*, second edition, (London: Pimlico, 1995), p. 243.

[19] Rawles, "Biological Diversity," p. 203.

[20] James A. Serpell, "Anthropomorphism and Anthropomorphic Selection: Beyond the 'Cute Response'," *Society and Animals* 11 (2003): 84.

with sufficient scientific knowledge.[21] However, expanded notions of human connection with nature have proved influential within environmental ethics. Deep ecology (and its more recent formulation as transpersonal ecology) describes an ethic of respect for nature that arises as a consequence of an expanded human capacity for identification with others to encompass all life.[22] Leopold and Callicott's land ethic arises from the recognition of our dependency on the integrity of natural ecosystems. Callicott maintains that "a universal ecological literacy would trigger sympathy and fellow-feeling for fellow-members of the biotic community and feelings of loyalty and patriotic regard for the community as a whole..."[23] Deep ecology and the land ethic move beyond anthropomorphism to sources of connection with nature that are less anthropocentric, although whether they can be deemed entirely non-anthropocentric seems unlikely.

Randall Lockwood distinguishes five categories of anthropomorphism that include a clear distinction between the first four, which reflect a human-centred perspective, and include such things as the dressing of animals in human clothes and the allegorical use of animals in films such

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[21] Rawles, "Biological Diversity," pp. 210-13.

[22] Arne Naess (translated by David Rothenberg), *Ecology, Community and Lifestyle*, (Cambridge: Cambridge University Press, 1989), pp. 171-76; Warwick Fox, *Toward a Transpersonal Ecology: Developing New Foundations for Environmentalism*, (Foxhole: Resurgence, 1995), pp. 249-52; Roderick Nash, *The Rights of Nature: A History of Environmental Ethics*, (Madison: University of Wisconsin Press, 1989), pp. 63-74.

[23] J. Baird Callicott, "Introduction," in *Environmental Philosophy: From Animal Rights to Radical Ecology*, second edition, ed. Michael E. Zimmerman (Englewood Cliffs: Prentice-Hall, 1998), p. 14.

as *Animal Farm*, and the fifth, which describes a more concerted effort to understand the nonhuman experience. This last category he describes as 'applied anthropomorphism', which is:

> the use of our own personal perspective on what it's like to be a living being to suggest ideas about what it is like to be some other being of either our own or some other species. This process is a form of projection, and it is a process that makes our life on earth as social beings possible... the essence of consciousness is using self-knowledge to predict the behavior of others.[24]

Using a different approach, the psychologist Peter Kahn has identified two perspectives that he maintains are distinct from anthropomorphism in being fundamentally biocentric in outlook: isomorphism and transmorphism. Whereas anthropomorphism projects human qualities directly onto nature, "in isomorphic reasoning a moral feature (such as freedom) is deemed important to both nature and humans, and on that basis a moral principle (such as protecting freedom) is applied equally to both nature and humans."[25] Transmorphism involves sympathising with nonhuman organisms on the basis of a shared need that does not manifest as a shared physical characteristic, an example being the need we share with fish to breathe oxygen, despite the manner in which we do so being quite

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[24] Randall Lockwood, "Anthropomorphism Is Not a Four-Letter Word," in *Perceptions of Animals in American Culture*, ed. R.J. Hoage (Washington, DC: Smithsonian Institution Press, 1989), p. 49.

[25] Peter H. Kahn, "The Development of Environmental Moral Identity," in *Identity and the Natural Environment: The Psychological Significance of Nature*, ed. Susan Clayton and Susan Opotow (Cambridge: The MIT Press, 2003), p. 118.

different. Kahn describes these perspectives as biocentric because, in response to survey questions, instances of isomorphic and transmorphic identification appear to hold human and nonhuman needs as morally equivalent.[26]

Kahn makes it clear that feelings of identification with nature are not limited to organisms that are similar in appearance and behaviour to humans, but can extend to fish and other things with which we share 'functional properties'. Gebhard, Nevers and Billmann-Mahecha highlight the importance of scientific knowledge in informing transmorphic reasoning:

> there are many natural objects that do not lend themselves well to anthropomorphic interpretation – grass, fish, sand dunes, and complex and more abstract objects such as ecosystems and species... These objects cannot be readily grasped by simple analogies to human experience... objective knowledge based on information from other sources and intersubjectivity are required for a more thorough understanding of otherness.[27]

By enabling identification to be founded on shared qualities that are relatively abstract, it becomes possible that any quality shared by living organisms might provide a basis for identification. It seems that the principal limiting factors are that the quality be deemed significant for

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[26] *Ibid.*, p. 117.

[27] Ulrich Gebhard, Patricia Nevers and Elfriede Billmann-Mahecha, "Moralizing Trees: Anthropomorphism and Identity in Children's Relationships to Nature," in *Identity and the Natural Environment*, ed. Clayton and Opotow, p. 106.

some reason, and that the subject (or object) of identification be considered in a positive light.

Other grounds for feelings of connection with nature are provided by Fox, who describes three 'bases of identification', being personal, ontological and cosmological. He suggests that personally based identification is the most common form, and arises through personal involvement with other entities, from family members to football clubs. As with the 'personal values' mentioned in the previous chapter, this source of identification cannot be easily generalised beyond the individual. Ontologically based identification arises from the profound realisation of the existence of other entities, while cosmologically based identification arises from a similarly profound realisation that all entities, including ourselves, form part of a greater unity.[28] The latter two bases of identification are more easily generalised to the whole of nature, and Fox notes that they are 'more transpersonal' than personally based identification.[29] Milton suggests that "Fox's analysis of identification is illuminating but incomplete", and she suggests two additional bases of identification: identity-based identification, and person-based identification. The former is derived from "the understanding that we and the other entity are of the same substance and can be transformed into one another", while the latter is grounded in "a sense of similarity with something", particularly a shared sense of 'personhood'.[30] As for anthropomorphism and transmorphism, these various bases of

[28] *Ibid.*, pp. 249-58.

[29] *Ibid.*, p. 250.

[30] Milton, *Loving Nature*, p. 79.

identification are derived from the identification of shared qualities. For the task at hand, the categories described by Fox and Milton are more informative than the categories of Kahn, but in some respects provide too much detail. The ontological, cosmological, and identity bases of identification are extremely similar in being grounded in the common essence of all things. In this regard they are more akin to transmorphism than anthropomorphism.

For environmentalism, one of the most influential shared qualities of recent decades is that of ecological interdependence. As noted above, the land ethic holds this quality to provide the foundation for human identification with nature, and much the same can be said for deep ecology.[31] The primary reason why this quality should be considered significant is that it emphasises the dependence of species and ecosystems, including humans, on other life forms. Not only does this provide an important source of feelings of connection, but it links to instrumental reasons for valuing nature.[32] An important consequence of the key role played by ecological knowledge is that it shifts the focus of identification from individual organisms to categories of organism (species), and collective entities (ecosystems). The exception is in cases where a species has declined to the point where each breeding individual has significance,

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[31] Peter Hay, *Main Currents in Western Environmental Thought*, (Sydney: UNSW Press, 2002), pp. 47-48.

[32] However, it should be noted that there do exist ecosystems that essentially share no ecological connection with humans, such as the 'chemosynthetic' organisms that cluster around deep-sea volcanic vents in the Arctic Ocean. In such cases, this source of value is irrelevant. See C.L. Van Dover, C.R. German, K.G. Speer, L.M. Parson and R.C. Vrijenhoek, "Evolution and Biogeography of Deep-Sea Vent and Seep Invertebrates," *Science* 295 (2002): 1253-57.

although even here the welfare of the individual may be compromised by attempts to have them breed in captivity.[33] The ecological emphasis also shifts the focus of identification from all organisms to those species necessary for the maintenance of ecosystem functioning. For example, the anticipated impacts on ecosystem functioning of non-native species introductions, and native species extinctions, encourage a tendency for feelings of identification to favour native species, particularly rare native species, over exotic species. This tendency is exemplified by the suggestion that surfaced in the popular magazine, *Nature Australia*, that each child be assigned a 'biodiversity identity' at birth, consisting of three native species, to increase the depth of personal connection felt for native flora and fauna.[34] In contrast, non-native species are excoriated as 'invaders' and 'enemies'.[35] The focus on species and ecosystems, the resulting ambivalence regarding the fate of individuals (at least in the wild), particularly those individuals that comprise a threatening species, has led to conflict with those whose emphasis is on other forms of identification that remain focused on the individual. Such conflict is

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[33] See Robert Vrijenhoek, "Natural Processes, Individuals, and Units of Conservation," in *Ethics on the Ark: Zoos, Animal Welfare, and Wildlife Conservation*, ed. Bryan G. Norton, Michael Hutchins, Elizabeth F. Stevens and Terry L. Maple (Washington, DC: Smithsonian Institution Press, 1995), pp. 88-89.

[34] Sarah Ryan, "What's Your Biodiversity Identity?" *Nature Australia*, Autumn 2004: 84.

[35] Matthew K. Chew and Manfred D. Laubichler, "Natural Enemies – Metaphor or Misconception?" *Science* 301 (2003): 52-53; Brendon M.H. Larson, "The War of the Roses: Demilitarizing Invasion Biology," *Frontiers in Ecology and the Environment* 3 (2005): 495-500. An Australian government initiative launched in 2005 was entitled the 'Defeating the Weed Menace Programme'.

characterised by the debate between animal rights advocates and ecocentric philosophers, discussed in chapter ten.

Other abstract qualities shared with natural entities that provide important targets for human feelings of identification include autonomy, or freedom, and sharing a common origin or 'creator'. The former can result in our identification with nonhuman life on the basis of shared autonomy and wildness, while the latter might cause us to identify with all aspects of the universe, and the universe itself, as embodiments of divine creation. The significance of these shared qualities will become clear during the discussion of motives three and four below. Although this first motive overlaps with the other motives when particular shared qualities are considered, it needs to be emphasised that the first motive is most particularly associated with the shared experience of pleasure, pain, and the condition of being alive, these being the least abstract of the shared qualities.

A final issue to consider here is the degree to which we are actually capable of identifying with nonhuman life. The experience of connection or identification with nature is essentially one-sided, especially when the targets of our feelings are not living, or are collective entities, such as species and ecosystems, rather than individual organisms. The possibility therefore arises that projections from our own experience may be misguided, in so far as we do not have an accurate understanding of the desires of other life forms.

There is debate among scientists as to the validity of looking to ourselves in order to understand animal behaviour and thought processes. Frans de Waal has coined the term 'anthropodenial' to describe the

tendency among some researchers to overlook similarities for fear of anthropomorphising; a tendency he believes is limiting.[36] Clive Wynne presents the opposing point of view; that anthropomorphism must be employed cautiously given the great differences that do exist between human and non-human consciousness.[37] Christopher Belshaw raises similar concerns:

> Even while not wanting to deny that fish feel pain, do we know how to begin comparing the pain of fish with that of birds? How is ten minutes of pain for a rabbit, which has a relatively short life, to be weighed against an equal pain of the same duration for a parrot or tortoise? What sorts of pleasures do swallows get from their low-level aeronautics?... Animals are so very different from us as to make any deep or detailed understanding of their mental lives quite impossible.[38]

> It seems wholly implausible to suppose that oysters, or hens, or fish have a sense of their own future, or an emotional life... Consider the sheep of the field. They can certainly seem to be distressed when their lambs are taken away. But nothing seems clearly to suggest that

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[36] Frans B.M. de Waal, "Anthropomorphism and Anthropodenial: Consistency in our Thinking About Humans and Other Animals," *Philosophical Topics* 27 (1999): 255-280.

[37] Clive D.L. Wynne, "The Perils of Anthropomorphism," *Nature* 428 (2004): 606.

[38] Christopher Belshaw, *Environmental Philosophy: Reason, Nature and Human Concern*, (Chesham: Acumen, 2001), p. 98.

> they have a sense of the future, memories of the past, or much that we might describe as an emotional life.[39]
>
> But the critical question is, can we imagine what pain feels like to a creature that cannot know what it feels like to itself? Can we imagine pain in creatures that are not self-conscious?[40]

It emerges that many of the 'feelings' we attribute to nonhuman life might be purely metaphorical. However, it is questionable whether an observation like this, or scientific findings that suggest a creature's *apparent* feelings could differ considerably from their actual feelings, would greatly influence the sensations of value attributed to nature resulting from anthropomorphic identification. Our persistent capacity to attribute feelings even to non-sentient life suggests that the sensation of identification can persist even when we are aware of the metaphorical nature of the experience. The delusion that this entails is innocent enough in most instances, but must be considered with a more critical eye when major changes in public policy are suggested, such as the claim that non-human organisms or non-sentient matter should be provided with legal or democratic representation.[41] In such instances it seems that greater weight ought to be accorded to the actual experience of the non-human, where this

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[39] *Ibid.*, pp. 103-104.

[40] *Ibid.*, p. 111.

[41] For discussion of such suggestions see Roderick Nash, *The Rights of Nature: A History of Environmental Ethics*, (Madison: University of Wisconsin Press, 1989), pp. 127-31; Christopher D. Stone, *Should Trees Have Standing? And Other Essays on Law, Morals and the Environment*, (Dobbs Ferry: Oceana Publications, 1996), p. 165; Robyn Eckersley, *The Green State: Rethinking Democracy and Sovereignty*, (Cambridge: MIT Press, 2004), pp. 123-135.

can be reliably determined, rather than our understanding of this experience as informed by anthropomorphism and the values that exert their influence over our feelings of connection and identification.

V. MOTIVE TWO – INTELLECTUAL INTEREST IN NATURE

This motive describes the human capacity to be interested in nonhuman life, natural processes and nonliving things, and the resulting desire to protect these things. This interest includes the passive curiosity that might inspire someone to watch a nature documentary, but is largely concerned with the active desire to accumulate knowledge about nature. Many instrumental reasons are available for why such knowledge might be sought, including the economic benefits of scientific research, the prestige associated with making scientific discoveries, the social interaction that can come with such activities, and the hope that the work will contribute to our ability to manage nature, either for our own benefit or for the benefit of valued aspects of nature. However, it is apparent that the accumulation of knowledge about nature can also be valued as an end in itself. Nature, to those so inclined, is infinitely interesting. This point was considered in a slightly different context in chapter five, where the capacity of biodiversity to inspire intellectual interest was described as an important source of its value. It is apparent that the primary focus of this motive is actually *knowledge* about nature rather than nature itself. Yet because the former is difficult to extricate from the latter, it seems reasonable to describe intellectual interest in nature, and the associated desire to accumulate

knowledge about nature, as a significant underlying motive for identifying inherent value in nature.

In chapter five a number of prominent conservation biologists were cited who likened their interest in nature to that associated with the practice of collecting. While it is not suggested here that intellectual interest in nature is motivated by the same psychological factors associated with the impulse to collect things,[42] intellectual interest in nature can give rise to a similar desire to preserve the subjects of interest, and in this regard the two are analogous. As these conservation biologists imply, an interest in anything, from antique automobiles to renaissance art, will give rise to a passionate desire to protect these things from destruction. The analogy is strained somewhat by the tendency of conservation biologists to express their concern not for the welfare of particular individual organisms, but for rare species and ecosystems. A better analogy is provided by endangered languages, which are those spoken only by a small and dwindling number of people. A portion of the concern expressed for this phenomenon is motivated by the loss of the language itself, rather than by the well-being of the people who speak it.[43]

Another manifestation of this motive as it applies to nature is the intellectual interest in rocks, landforms, tectonic processes, and other geological phenomena. It has been widely claimed that 'geodiversity' has a

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[42] See, for example, William D. McIntosh and Brandon Schmeichel, "Collectors and Collecting: A Social Psychological Perspective," *Leisure Sciences* 26 (2004): 85-97.

[43] See the website of the UNESCO Endangered Languages Programme (http://www.unesco.org/culture/en/endangeredlanguages).

subjective 'existence' or 'intrinsic' value.[44] Charles Richardson makes the provocative suggestion that because life without consciousness is merely a 'complex physical process', then complex, non-biological processes are as deserving of value as non-conscious life. If speciation has intrinsic value then why not erosion?[45] Although thought provoking, this rhetorical question fails to acknowledge the additional complexity, and resulting potential to inspire our interest, of living systems, not to mention the increased likelihood that we will identify with, and feel a sense of moral responsibility for living rather than nonliving nature. In any event, it remains entirely possible that nonliving natural processes and entities, from global weather systems to other planets, can be found to have inherent value as a result of the intellectual interest they inspire.

In the previous section it was suggested that we have a tendency to experience a sense of connection with other living things on the basis of shared qualities that are for some reason deemed significant. Of the three examples of shared qualities, ecological interdependence is particularly relevant for the motive of intellectual interest. Because this motive gives rise to a deep concern for the maintenance of biodiversity, ecological interdependence is imbued with significance as it emphasises the

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[44] Murray Gray, *Geodiversity: Valuing and Conserving Abiotic Nature*, (Chichester: John Wiley & Sons, 2004), pp. 68-69; Kevin Kiernan, *Conserving Geodiversity and Geoheritage: The Conservation of Glacial Landforms*, (Hobart: Forest Practices Unit, 1996), pp. 14-15. See also the website of The GeoConservation Commission of the Geological Society of London (http://www.geoconservation.com).

[45] Charles Richardson, "Some Philosophical Aspects of Biodiversity," in *The Price of Preservation*, ed. Andrew Chisholm and Alan Moran (Melbourne: Tasman Institute, 1993), p. 70.

dependence of rare species and ecosystems on other life forms, including ourselves. However, this is not the only source of connection relevant to the motive of intellectual interest. As observed by the conservation biologist, Michael Soulé, "most biologists love plants or animals – they love different ones. Some like lizards, some like grasses. But there's a certain affinity we have and even identification we have with the objects of our study".[46] This suggests that simply acquiring knowledge about an aspect of nature can inspire feelings of connection. Fred Koontz also conveys the impression that these feelings of connection go hand-in-hand with intellectual interest:

> Many zoo biologists become interested in animals at a young age, and this early avocation often fosters a naturalistic attitude toward animals. The primary characteristic of this point of view is a strong interest and affection for the outdoors and wildlife... Observation and personal involvement with wildlife are also the key to the naturalistic perspective. For many of these future zoo biologists, animals become living objects to identify, compare, and catalog. Often their curiosity leads them to collect live specimens to bring home for closer study, frequently to the dismay of their parents.[47]

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[46] David Takacs, *The Idea of Biodiversity: Philosophies of Paradise*, (Baltimore: The Johns Hopkins University Press, 1996), p. 139.

[47] Fred Koontz, "Wild Animal Acquisition Ethics for Zoo Biologists," in *Ethics on the Ark: Zoos, Animal Welfare, and Wildlife Conservation*, ed. Bryan G. Norton, Michael Hutchins, Elizabeth F. Stevens and Terry L. Maple (Washington, DC: Smithsonian Institution Press, 1995), p. 129.

However, it remains apparent that such feelings of connection are of a different order to those associated with motive one. Whereas the latter relate to the shared experience of pleasure, pain, and the condition of being alive, the former are firmly grounded in knowledge and less likely to inspire concern for individual organisms.

VI. MOTIVE THREE – RESPECT FOR THE LARGER CONTEXT

The review of the value of naturalness presented in chapter six indicated that a number of authors, notably Goodin, have linked this value with a human tendency to seek some larger context within which our lives are embedded. In this way, the larger context provides meaning and purpose to life. In Western societies, the larger context has for many centuries been provided by various interpretations of the Christian religion, with God the ultimate source of earthly meaning. However, it has been suggested that nature is also capable of providing this larger context. Nature can be seen to encompass humanity in every way. The history of civilisation represents a small blip compared with the age of the universe or the time since life first appeared on Earth. The human race will almost certainly disappear long before life is finally extinguished. Despite our technological advances, humans are still subject to the laws of nature and regularly assailed by natural phenomena. Nature is also indifferent to human goals, being incapable of abstract reasoning and aloof to human concerns.[48]

[48] Paul Wapner, "The Sovereignty of Nature? Environmental Protection in a Postmodern Age," *International Studies Quarterly* 46 (2002): 171.

One path to conceptualising nature as representing the larger context is to equate nature with God. Max Oelschlaeger observes that the all-encompassing influence of nature has long been associated with human spirituality, having been a continuous feature of civilisation from the Great Mother (Magna Mater) of the Paleolithic age to post-Enlightenment resistance to mechanistic metaphors for nature.[49] As noted by Roderick Nash, for John Muir and Henry Thoreau, "the basis of respect for nature was to recognize it as part of the created community to which humans also belonged. God permeated Muir's environment. Not only animals, but plants... and even rocks and water were 'sparks of the divine soul'."[50] Warwick Fox notes that such reverence is compatible with the attribution of intrinsic value to nature on the basis of 'cosmic purpose':

> some or all nonhuman entities are considered to be morally considerable by virtue of the fact that they in some sense embody or are expressive of some kind of *cosmic* interest. These approaches generally rely upon views about the ultimate ends of evolution or the nature of God or God's purposes.[51]

Bill McKibben, in his controversial book *The End of Nature*, also considers God to be relevant to the value of nature as a manifestation of forces larger than humanity. He suggests that "by domesticating the earth, even though we've done it badly, we've domesticated all that lives on it... And there is

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[49] Max Oelschlaeger, *The Idea of Wilderness: From Prehistory to the Age of Ecology*, (New Haven: Yale University Press, 1991).

[50] Roderick Nash, *The Rights of Nature: A History of Environmental Ethics*, (Madison: University of Wisconsin Press, 1989), p. 39.

[51] Fox, *Toward a Transpersonal Ecology*, p. 179.

nobody above us. God, who may or may not be acting in many other ways, is not controlling the earth."[52] This is a problem, he explains, because "we are used to the idea that something larger than us and not of our own making surrounds us, that there is a world of man and a world of nature. And we cling to that idea in part because it makes that world of men easier to deal with."[53] This he later associates with a profound feeling of loneliness.[54]

However, it is not necessary that nature's capacity to provide a larger context for human lives be tied to the existence of divine powers. As observed by Ronald Dworkin:

> some conservationists who do not think of themselves as religious may nevertheless hold a powerful, intuitive conviction that nature is *itself* alive, a mysterious, inexorable force unifying all life in Life itself... People with either of these views – the conventionally religious one or some version of the idea that nature itself is purposive – believe that destroying a species is wrong because it wastes an important and creative achievement of God or the procreant world. They mean that we should regret the loss of a species just as – though to a much greater degree than – we would

[52] Bill McKibben, *The End of Nature*, (London: Viking, 1990), p. 78.

[53] *Ibid.*, p. 79.

[54] *Ibid.*, p. 83.

> regret the foundering of some project on which we or others had long labored.[55]

Goodin seeks to distance his green theory of value from its theological potential because of the limitations it might impose on the theory, such as being too closely associated with New-Age spirituality.[56] Simon Hailwood is wary of such connections because it implies that the ultimate source of the value of otherness is God, which is an unsuitable basis for value in so far as it suggests that non-believers cannot value this quality in nature.[57]

This motive may also give rise to a sense of connection with nature on the basis of shared membership of a larger context. However, as suggested by the ontological, cosmological, and identity bases of identification mentioned above, this sense of connection can take a variety of forms. If the larger context is believed to be defined by ecological relationships, then this will provide the basis for identification, encouraging a focus on native species and ecosystems. If the larger context is believed to be defined ultimately by God or a more secular reverence for life in general, then the sense of connection with nature is likely to accord greater significance to individual organisms while remaining informed by an awareness of ecological relationships. If the larger context is defined by a view of nature as independent of humanity, as suggested by Goodin, then the autonomy and freedom of nature will provide the basis for identification.

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[55] Ronald Dworkin, *Life's Dominion: An Argument About Abortion and Euthanasia*, (London: HarperCollins, 1993), p. 79.

[56] Goodin, *Green Political Theory*, pp. 39-40.

[57] Simon Hailwood, *How To Be a Green Liberal: Nature, Value and Liberal Philosophy*, (Chesham: Acumen, 2004), pp. 49-50.

Before proceeding it is worth commenting on the source of nature's spiritual significance. Despite the obvious spiritual implications of this third motive, the other motives can have similar implications. For example, Carolyn Merchant describes as 'spiritual ecology' the practice of 'the council of all beings', which is intended to "bring to consciousness the natural history of the planet and convey an authority to act on its behalf. Identification with the earth and its beings empowers each person and removes doubts and hesitations."[58] Further, some people find nature intellectually interesting because they wish to explore the larger context, or what is perceived as the work of God. David Takacs suggests that for some scientists "getting to know biodiversity better takes the place of getting to know God better."[59] A similar cross-over can be found between respect for the larger context and the fourth motive, described in the next chapter. In these various interactions between motives it is impossible to say which is dominant or which precedes the other. Such diversity is reflected in the variety of views on spirituality recorded by Barbara McDonald during a study of environmental activitists.[60] It becomes increasingly apparent that Weston's reference to an 'ecology of values' is particularly apt.

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[58] Carolyn Merchant, *Radical Ecology: The Search for a Livable World*, (London: Routledge, 1992), p. 111.

[59] David Takacs, *The Idea of Biodiversity: Philosophies of Paradise*, (Baltimore: The Johns Hopkins University Press, 1996), p. 270. See also Bron R. Taylor, "Conservation Biology," in *The Encyclopedia of Religion and Nature*, ed. Bron R. Taylor (London: Thoemmes Continuum, 2005). Available from the website of the International Society for the Study of Religion, Nature, and Culture (http://www.religionandnature.com/ern/sample.htm).

[60] Barbara McDonald, "The Soul of Environmental Activists," *International Journal of Wilderness* 9 (2003): 14-17.

VII. CONCLUSION

This chapter has described three of the four motives underlying our capacity to identify inherent values in nature. These motives have been identified as manifestations of cultural influence, which are found within our subconscious, interacting with each other, with our instrumental concerns, with our raw emotional responses to nature, and with values derived from other sources. Associated with each motive are feelings of identification with nature, and it is apparent that such feelings constitute one of the most significant positive emotional responses to nature. The next chapter is devoted to the fourth and final motivation associated with inherent value: dissatisfaction with the abstractions of modern society.

Chapter Nine

DISSATISFACTION WITH THE ABSTRACTIONS OF MODERN SOCIETY

The land has been hurt. Misuse is not to be excused, and its ill effects will long be felt. But nature will not be eliminated... Rain, moss, and time apply their healing bandage, and the injured land at last recovers.

Robert Michael Pyle (1996)[1]

Any satisfactory philosophy of nature... must recognize: 1. That natural processes go on in their own way, in a manner indifferent to human interests and by no means incompatible with man's total disappearance from the face of the earth.

John Passmore (1975)[2]

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[1] Robert Michael Pyle, *Wintergreen: Listening to the Land's Heart*, (New York: Houghton Mifflin, 1996), p. 281.

[2] John Passmore, "Attitudes to Nature," in *Nature and Conduct*, ed. R.S. Peters (New York: St Martin's Press, 1975), p. 259.

I. INTRODUCTION [3]

This chapter considers the fourth motive for the inherent value of nature, being "dissatisfaction with the abstractions of modern society." While the other motives are also complex (particularly motive one), the relationship between them and the associated sensations of value are more straightforward. That these motives should provide a rationale for valuing nature was not in dispute. For motive four the situation is not so straightforward, and for this reason it has been assigned its own chapter.

II. NATURALNESS REVISITED

Toward the end of chapter six, the discussion turned to why natural processes are valued. A review of the literature on this question was conducted, with the most prevalent explanation being that the independence of nature is indicative of forces larger than humanity, which might include divine presence of some sort. Many authors believe that the value of wild nature is grounded in this symbolic quality. This explanation

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[3] Some of the material included in this chapter was first aired in a paper delivered by the author to the Ecopolitics XVI conference, held at Griffith University in Brisbane, Australia, between July 4 and 6, 2005. The paper was subsequently published in the inaugural issue of the *Griffith Journal of the Environment*, some sections of which are revisited in a paper that has been accepted for publication in the *Journal of Agricultural and Environmental Ethics*. See Ben Ridder, "Reorienting Ecocentrism to Nature-Inspired-Autonomy," *Griffith Journal of the Environment* 1 (2005): http://www.gu.edu.au/faculty/ens/gje; Ben Ridder, "An Exploration of the Value of Naturalness and Wild Nature," *Journal of Agricultural and Environmental Ethics*: in press.

is reflected in the third motive, 'respect for the larger context', described in the previous chapter. However, this motive does not constitute a complete explanation. As suggested in chapter six, it seems unlikely that all those who value naturalness are seeking to define their lives with respect to some larger context. Further, it is not clear why nature should be chosen over other things capable of providing a larger context.

Another explanation for the value attributed to the autonomy of nature was that the appropriate moral stance toward nature *demanded* respect for its autonomy. This explanation is problematic because it requires that the moral considerability of nature be already established. The position taken here is that the tendency to attribute moral considerability to nonhuman life can be explained, at least in part, with reference to the four motives under investigation, rather than being entirely independent of human motivations.

In the previous chapter, two motives additional to 'respect for the larger context' were identified that might be capable of explaining why natural processes are valued. Motive one, describing the experience of connection with nonhuman life, is capable of inspiring respect for the autonomy of nature, insofar as it might lead us to oppose actions that restrict the freedom of nonhuman entities. However, a critical inconsistency is apparent between this motive and the value of naturalness. By respecting nature's autonomy, one is opposed to intervening in natural processes, even if this lack of action is understood to result in loss of life. This is hardly the sort of behaviour that one would expect from those motivated by empathetic concern for the welfare of nonhuman entities. The second motive, describing intellectual interest in nature, might also be thought capable of inspiring respect for the autonomy of nature. However, this

motive gives rise to the same inconsistency arising from the first. People motivated primarily by their intellectual interest in nature would respond to threats to valued aspects of nature by seeking to eliminate the threats. Unless their particular interest was natural processes themselves it seems unlikely they would feel any qualms about intervening in such processes to achieve this protective end. Hence, any respect for nature's autonomy is usurped by concern for the welfare of nonhuman life or collective entities such as species and ecosystems.

Given the unsatisfactory explanations for the value of naturalness provided by these two motives, and because motive three has already been identified as insufficient in this regard, it is left to the final motive to fill the gap. This last explanation for the inherent value of nature emerges from the connection, identified in chapter six, between naturalness and human autonomy. To recap, it was argued that our perception of naturalness in any given situation is strongly influenced by our perception of the influence of abstract instrumentalism. This insight gives rise to the possibility that naturalness is valued because the forces characteristic of abstract instrumentalism, and their threat to individual autonomy, are not valued.

III. MOTIVE FOUR – DISSATISFACTION WITH THE ABSTRACTIONS OF MODERN SOCIETY

A frequent topic of discussion within environmental texts are processes characteristic of contemporary society that alienate the individual. Frequently mentioned are such things as bureaucracy, modern technology, economically-oriented decision making, and corporate greed, all of which

reflect the application of what has been termed 'instrumentalism' or 'instrumental rationality'. Instrumentalism entails activity directed toward maximising the achievement of precise goals in a mechanistic fashion. These goals invariably include economic return and productivity, and rarely include such human qualities as morality, understanding and creativity.[4] For the individual, the priorities generated by these goals are likely to appear abstract relative to their own priorities, insofar as they reflect goals and values that are not one's own. The individual can be said to be autonomous provided that their decisions – to buy products, vote for politicians, or barrack for sporting teams, for example – are largely directed by their own goals and values, rather than goals and values imposed on them by external influences.

In contemporary western societies, the success of most organisations depends to some extent on providing products or services that people want, and in this regard they do not infringe on the autonomy of the individual. However, because corporate and bureaucratic activities also reflect goals that are abstract from the perspective of the individual – including corporate profit, political ambition, and/or minimising legal liability – individual autonomy is to some extent undermined simply by living in a modern community. Some loss of autonomy is effectively unavoidable in any society that demonstrates a minimum degree of integration, as the decisions taken by the central authority, for example, or by companies seeking to maximise sales, will at best represent a distillation of the majority view, and at worst will reflect the interests of the privileged few.

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[4] John Ralston Saul, *On Equilibrium*, (Camberwell: Penguin, 2002)

In either situation there will be many individuals for whom such decisions are abstract in their intents and effects. If these people are aware of the disparity between their own goals and those they implicitly support through participation in society, and if they place a high enough value on their own autonomy, they may subsequently desire some degree of societal change, a greater degree of independence from broader society, or both.

There are many for whom instrumentalism poses no great concern. They are generally satisfied with the progress of their lives. But there remains a significant proportion of the population who believe that society would be improved if decision making better reflected the goals that they consider to be important. Given the difficulty the individual faces in bringing about such a change, a common response to such dissatisfaction is apathy. Others respond more actively, either through engagement with decision making processes in order to influence them, or by distancing themselves from those aspects of society they cannot countenance. Whichever of these three responses characterises an individual, the possibility exists that their dissatisfaction with society gives rise to a corresponding concern for nature on the basis of its autonomy.

IV. NATURE AS A COUNTERPOINT TO SOCIETY

That a desire for autonomy from the abstractions of contemporary society might form the basis of inherent values in nature requires that nature have qualities that resonate with and fulfill this desire. These qualities can be summed up by the statement that nature can function as a counterpoint to society. Although, as we will see, some argue that this

understanding of nature should be resisted, it remains one that is easily reached and, moreover, one that is a profound source of inherent value. The qualities of nature that encourage this view of nature include the following:

1) By definition, 'natural' is distinct from 'artificial'.
2) Nature provides an outlet for physical escape from society.
3) Nature is symbolic of autonomy from society.
4) Nature is a victim of society.

As discussed in chapter six, 'naturalness' is defined by the absence of human intervention, and particularly those activities directed by abstract instrumentalism. Consequently, 'naturalness' is an antonym of 'artificiality'. By extension, 'nature' describes things and places that are radically different from those over which humans exert considerable control. This difference relates primarily to organising processes rather than physical substance. For example, although an ecological restoration might be physically indistinguishable from a naturally evolved ecosystem, it does not follow, in such cases, that a meaningful distinction between 'natural' and 'artificial' cannot be made. However, this point aside, it remains so that in most cases artificial products are easily distinguished from natural ones by virtue of their physical characteristics, and consequently they provide a straightforward counterpoint to society.

'Nature' is also frequently used to describe locations where physical escape from society is possible. Whether it be seeking refuge in a city park during the lunch-hour, spending the annual family holiday camping in a

national park, or selling up and moving to a bush block in the country to practice a self-sufficient lifestyle, nature provides a setting where the stresses and alienating values of the modern world can be, to some extent, left behind. With this distance from society can come a greater awareness of the necessities of existence. These are concealed during the course of everyday life by the availability of devices, infrastructure, and manufactured foodstuffs that render our existence less inhibited by menial tasks. To the person dissatisfied with those apparently indefatigable forces within society that seem to hold such sway over their lifestyle choices, reconnecting with the basic necessities of existence is liberating when it serves to highlight the superfluousness of many aspects of modern life.

The desire to escape the abstractions and demands of society is embedded within definitions of wilderness. The United States *Wilderness Act* emphasises that these are areas "where man himself is a visitor who does not remain", which are "without permanent improvements or human habitation", and which have "outstanding opportunities for solitude or a primitive and unconfined type of recreation".[5] For Stephen Kaplan and Janet Talbot, the defining features of wilderness include a "relative absence of demands on one's behavior that are artificially generated or human imposed. A primary activity [in wilderness] is the meeting of one's vital needs."[6] In a similar vein, Joseph Sax, drawing upon the thought of

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[5] *The Wilderness Act 1964* (United States), Section 2 (c).

[6] Stephen Kaplan and Janet F. Talbot, "Psychological Benefits of a Wilderness Experience," in *Behavior and the Natural Environment*, ed. Irwin Altman and Joachim F. Wohlwill (New York: Plenum Press, 1983), p. 199.

Frederick Law Olmsted, explains that nature recreation is important because it "provides a stimulus to engage the contemplative faculty":

> In most of our activities we are busily accomplishing things to satisfy the demands and expectations of other people, and dealing with petty details that are uninteresting in themselves and only engage our attention because they are a means to some other goal we are trying to reach. Olmsted does not suggest that gainful activity is a bad thing by any means; only that it offers no opportunity for the mind to disengage from getting tasks done, and to engage instead on thoughts removed from the confinement of duty and achievement. He calls this the invocation of the contemplative faculty.[7]

The capacity of nature to provide opportunities for physical escape from society is acknowledged in all classifications of the value of nature, usually under the title of 'recreation'. Another perspective on this source of value is included within the lists of wilderness values prepared by Michael Nelson and George Sessions, both of whom describe the value of wilderness as a physical refuge from totalitarian governments. In doing so, Sessions makes reference to the role of wilderness in dystopian literature,[8]

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[7] Joseph L. Sax, *Mountains Without Handrails: Reflections on the National Parks*, (Ann Arbor: The University of Michigan Press, 1980), p. 20.

[8] George Sessions, "Ecocentrism, Wilderness, and Global Protection," in *The Wilderness Condition: Essays on Environment and Civilization*, ed. Max Oelschlaeger (Washington, DC: Island Press, 1992), p. 100.

while Nelson largely draws on ideas presented by Edward Abbey in *Desert Solitaire*.[9]

Another important quality of nature that enables it to function as a counterpoint to society is that nature itself is autonomous from society. The reason for why this should be so, as discussed in chapter six, relates to the lack of any capacity for rational agency (at least to that degree displayed by humans) on the part of nonhuman life and natural processes. The autonomy of nature can be viewed as a symbolic exemplar of autonomy from society by those who, being dissatisfied with the abstract forces of society, have reason to value its symbolic counterpoint. Support within the literature for this notion is presented in the following section.

Finally, nature's status as a counterpoint to society is reinforced by the evident decline of nature in response to both the growth of the human population and expansion in the area of land developed to satisfy the collective needs of society. Although nonhuman life is not necessarily destroyed by all human activities, in practice the abstract forces of contemporary western society, or at least those that generate the sort of dissatisfaction described above, generally contribute to the loss of undeveloped natural areas and associated death of wild organisms.

Each of these qualities can resonate strongly for people who seek a measure of independence from societal forces. This in turn can result in a high value being placed on the autonomy of natural processes, encouraging

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[9] Michael P. Nelson, "An Amalgamation of Wilderness Preservation Arguments," in *The Great New Wilderness Debate*, ed. J. Baird Callicott and Michael P. Nelson (Athens: University of Georgia Press, 1998), pp. 181-82; Edward Abbey, *Desert Solitaire*, (Tucson: University of Arizona Press, 1968).

a 'hands-off' approach to managing natural areas, and faith in the 'balance of nature'. Human artifacts, attributes and abilities that are relatively free of rationally-planned intervention, and which might be termed 'natural', are not necessarily valued because of any link with nature, but because of the original motivating dissatisfaction with alienating societal forces.

V. NATURE AS A SYMBOLIC EXAMPLAR OF AUTONOMY

This quality of nature is deserving of particular attention, being less straightforward, and less frequently acknowledged, than those qualities described above. Some of the value classifications discussed in chapter seven allude to the capacity for nature to function as a symbolic counterpoint to contemporary western society, although it is not accorded any particular significance. Among their reasons for protecting wilderness both Sessions and Warwick Fox note the capacity of the nonhuman world to provide symbolic value, the principal example being as a symbol of human freedom.[10] Both deploy the following quote from Bryan Norton, found in an article printed in *The Washington Post Magazine*: "other species, which struggle to survive in living, unmanaged ecosystems [ought to be preserved because they] are our most powerful symbols of human

[10] Sessions, "Ecocentrism, Wilderness, and Global Protection," pp. 97-98; Warwick Fox, *Toward a Transpersonal Ecology: Developing New Foundations for Environmentalism*, (Foxhole: Resurgence, 1995), p. 156.

freedom."[11] Mark Sagoff and Holmes Rolston similarly observe in nature a capacity to symbolise freedom.[12]

However, these authors do not see this symbolic value of nature as having any particular significance. Rolston mentions it only in relation to creatures that particularly evoke freedom, such as the bald eagle, rather than nature as a whole. Fox and Sagoff group all metaphorical uses of nature into a single undifferentiated category, and thereby overlook the important role of nature's autonomy in an information-driven, abstract-goal-oriented, bureaucratic age. Although Sessions includes an additional category to emphasise the "importance of wilderness as a standard for freedom and autonomous behavior, and as a refuge from totalitarianism", in a separate piece he highlights the symbolic importance of nature for human freedom only with regard to freedom from anthropocentrism, rather than social constraint generally.[13] Even Norton, whose quotation suggests some awareness of this significance, fails to elaborate. Despite including much of the material contained in the *Washington Post* article in his book *Toward Unity Among Environmentalists*, no mention is made of species as 'symbols of human freedom', even though such symbols may well

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[11] Bryan G. Norton, "Sand Dollar Psychology," *The Washington Post Magazine*, 1 June 1986, p. 13.

[12] Mark Sagoff, "On Preserving the Natural Environment," *Yale Law Journal* 84 (1974): 245-67; Holmes Rolston, *Conserving Natural Value*, (New York: Columbia University Press, 1994), pp. 130-31, 137.

[13] Sessions, "Ecocentrism, Wilderness, and Global Protection," pp. 97-98; George Sessions, "Appendix H: 1984", in *Deep Ecology: Living as if Nature Mattered*, ed. Bill Devall and George Sessions (Layton: Gibbs Smith, 1985), pp. 254-256.

constitute a unifying source of value for otherwise disparate factions within the environment movement.[14]

A more developed understanding of the symbolic significance of the autonomy of nature within contemporary Western society surfaces rarely within the literature of environmental philosophy. Both Wayland Drew and Piers Stephens have made important contributions to the discourse linking human autonomy with the value of naturalness through their consideration of the role of nature in dystopian literature. Drew, writing in 1972, directs his attention to three novels, all written in the first half of the twentieth century: *We*, by Yevgeny Zamyatin, *Brave New World*, by Aldous Huxley, and *1984*, by George Orwell. Stephens restricts his consideration to *1984*. Drew observes that in each of these visions of highly organised, repressive future societies, nature is presented as being external to the reality imposed by authoritarian propaganda and control. Nature therefore has a subversive role, inspiring the downtrodden citizens to seek personal freedom. He proceeds to describe the relevance of nature for contemporary society:

> wilderness assumes an awesome importance, for it is the sole index by which we can measure the extent of our own subjugation to unnatural forces... Only in wilderness is it possible to escape this tyranny... In wilderness a man or woman has physically left behind the milieu of conditioning... He has bypassed the mass of alternatives posed by the assumptions of the technological society

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[14] 'Freedom' is discussed at length in the epilogue, but not 'symbols of freedom'. See Bryan G. Norton, *Toward Unity Among Environmentalists*, (New York: Oxford University Press, 1991), pp. 244-55.

> and glimpsed a possibility which his society will tell him is reactionary, archaic, and impossible, but which his body and his spirit tell him is absolutely correct.[15]

Stephens emphasises similar themes:

> Nature... experientially supports liberty as a counterpoint to the arbitrariness of human will, providing the vital context of spontaneous independence for loosening narrow dogmatism, enabling human faculties and prospects to be broadened beyond mere power hunger.[16]

Thomas Birch supports this view, although without literary reference, in his suggestion that "wilderness reservations are best viewed as holes and cracks... in the fabric of domination and self-deception that fuels and shapes our mainstream contemporary culture."[17]

Another author who deserves mention here – yet whose contribution to this discourse is largely unavailable to those who cannot read French – is Bernard Charbonneau.[18] Born in 1910, and strongly influenced by the First

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[15] Wayland Drew, "Killing Wilderness," *The Trumpeter* 3 (1986): 20-21. This paper was originally published in the *Ontario Naturalist*, September 1972.

[16] Piers H.G. Stephens, "Nature and Human Liberty," *Organization & Environment* 17 (2004): 94.

[17] Thomas Birch, "The Incarceration of Wildness: Wilderness Areas as Prisons," *Environmental Ethics* 12 (1990): 25.

[18] Charbonneau is little known outside of Europe, and none of his many books have been translated into English. Even in France his work went largely unrecognised until the 1970s when it attracted the attention of the emerging French environment movement.

World War, Charbonneau viewed society as subject to abstract forces such as capitalism, bureaucracy and technology, whose progress was largely independent of human control.[19] As related by Daniel Cérézuelle, it followed that:

> In a world that tends to become totally organized according to impersonal logics, the protection of nature is a vital necessity – not only for avoiding ecological disasters, but also for preserving freedom. It is one of the originalities of Charbonneau's thought that he reminds environmentalism of its duty to act in view of two values: Nature and Freedom.[20]

In order to experience freedom, Charbonneau felt that humans could not live entirely in a social world: "They need to experience the otherness of nature in order to exert their freedom in a personal way..."[21]

Within the conservation management literature, debate over the appropriateness of ecological restoration activities in wilderness areas has given rise to discussion of the values associated with not managing nature. This is another aspect of wilderness that receives particular mention within the United States *Wilderness Act*, which states that a wilderness is "an area

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[19] John Clark, "Bernard Charbonneau: Regionalism and the Politics of Experience," *Capitalism, Nature, Socialism* 13 (2002): 42-44.

[20] Daniel Cérézuelle, "Nature and Freedom: An Introduction to the Environmental Thought of Bernard Charbonneau," in *Rethinking Nature: Essays in Environmental Philosophy*, ed. Bruce V. Foltz and Robert Frodeman, (Bloomington: Indiana University Press, 2004), p. 322.

[21] *Ibid.*, p. 322.

where the earth and its community of life are untrammeled by man..."[22] The term 'untrammeled' has particular significance. As intended by the person who drafted the legislation, Howard Zahniser, it does not explicitly refer to an absence of humans, or of human impacts, but freedom from human control.[23] David Cole has been prominent among those who have attempted to articulate why the quality of being 'untrammeled' might be valued. He suggests that:

> wilderness designation is a symbol of human restraint and humility. Wilderness lands are the only lands where humans refrain from saying that they know best... Wilderness can only be a contrast to the arrogance of modern society if we refrain from manipulating wilderness – even to enhance its ecological or experiential values... The symbolic values of wilderness are the most radical elements of the wilderness idea. They are the values that contrast most with modern society – with its faith in scientific knowledge and reliance on technological solutions to problems.[24]

It is these same values that are the underlying theme of Jack Turner's collection of essays, *The Abstract Wild.* In the introduction he notes that "the antagonists in my story are not the usual fall guys – industrialists, ranchers, tourists, or loggers – though they personify the problem. No, my

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[22] *The Wilderness Act 1964* (United States), Section 2 (c).

[23] Douglas W. Scott, "'Untrammeled', 'Wilderness Character,' and the Challenges of Wilderness Preservation," *Wild Earth* 11 (2001): 74.

[24] David N. Cole, "Symbolic Values: The Overlooked Values That Make Wilderness Unique," *International Journal of Wilderness* 11 (2005): 24-27.

enemies are abstractions..."[25] Later he draws attention to the connection between the impositions of society, the autonomy of the individual, and the wildness of nature, observing that:

> control increases with civilization, and modern civilization, being largely out of control – an ideology of control projected onto the entire world – must control or deny wildness. This prospect is most clearly represented by the dystopian novels, beginning with Yevgeny Zamyatin's *We*... The important point is that whatever kind of autonomy is in question – human freedom, self-willed land, self-ordering systems, autopoiesis – all are incompatible with external control.[26]

There are many other authors who have briefly elaborated on these themes, often in the context of romanticism,[27] and particularly when reflecting on the life and thought of the American author Henry David Thoreau.[28]

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[25] Jack Turner, *The Abstract Wild*, (Tucson: The University of Arizona Press, 1996), p. xiv.

[26] *Ibid.*, pp. 112-13.

[27] See, for example, Georg Simmel (translated and edited by Kurt H. Wolff), *The Sociology of Georg Simmel*, (New York: The Free Press, 1967), pp. 64-65; Roderick Nash, *Wilderness and the American Mind*, (New Haven: Yale University Press, 1973), p. 157; Raymond Williams, *The Country and the City*, (London: Chatto & Windus, 1973); Kate Soper, *What is Nature? Culture, Politics and the Non-Human*, (Oxford: Blackwell, 1995), pp. 187-92.

[28] Stephen Budiansky, *Nature's Keepers: The New Science of Nature Management*, (New York: The Free Press, 1995), p. 37; Nichols Fox, *Against the Machine: The Hidden Luddite Tradition in Literature, Art, and Individual Lives*, (Washington, DC: Island Press, 2002), p. 123; Thomas R. Dunlap, *Faith in*

However, not all authors make the explicit connection between the value of wild nature and the capacity of nature to provide a symbolic counterpoint to contemporary society, and of those who do, none consider the link between respect for wild nature and the more general value attached to naturalness, and the significant implications of such connections for the study of environmental ethics.[29]

Autonomy from the overwhelming forces of contemporary society is a recurring theme within all manner of 'environmental' debates, and serves as a powerful connection between environmental groups and others active within society. These include the anti-globalisation movement, the alternative communities movement, and the peace movement. For example, the defining goals of many alternative communities include achieving greater levels of individual freedom and establishing distance from the institutions of contemporary society.[30] Further, Meredith Veldman notes that the reaction in both the UK and the USA against nuclear weapons was strongly influenced by concern at the loss of individual autonomy and the triumph of technocracy.[31] J. Sanford Rikoon even

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Nature: Environmentalism as Religious Quest, (Seattle: University of Washington Press, 2004), pp. 42-52.

[29] It is not surprising that Georg Simmel failed to elaborate on these issues, given that his work predates the appearance of environmental ethics as a distinct subject of enquiry. Simmel's observations on nineteenth century feelings about nature date from a lecture given in 1917.

[30] See, for example, Margaret Munro-Clark, *Communes in Rural Australia: The Movement Since 1970*, (Sydney: Hale & Iremonger, 1986), pp. 13-44.

[31] Meredith Veldman, *Fantasy, the Bomb and the Greening of Britain: Romantic Protest, 1945-1980*, (Cambridge: Cambridge University Press, 1994), pp. 148-149, 202-203.

suggests that groups that have been labeled 'anti-environmental' might actually qualify as environmental when it is acknowledged that the target of their concern is not nature or nonhuman life, but centralised control associated with environmental authority. With regard to a particular dispute over the presence of wild horses within a conservation area, Rikoon suggests that:

> the anti-environmental label is better characterized as an anti-ecocracy movement, by which is meant that the core of regional opposition is increasingly the fear of the rise of an enlightened authority that attempts to bring a biocentric ecological rationalization to all centers of power. It is not environmental protection per se that people oppose, but the use of environmental protection as a pretext and means for a small group of people – the ecocrats (here in the form of the NPS) – to tighten their grip on everyday life and the social environment. If this happens, a biocentric ecological rationalization wielded by an ecocracy can threaten to infiltrate all areas of private concern – from government to religion.[32]

This link between environmentalism and autonomy is also identified by Thomas Heyd who observes that in Latin America, "the primary aim of environmental ethics and action... may be to strengthen the community's *autonomy* and autosufficiency against outside forces, represented by large-

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[32] J. Sanford Rikoon, "Wild Horses and the Political Ecology of Nature Restoration in the Missouri Ozarks," *Geoforum* 37 (2006): 209.

scale commercial or government entities."[33] Such comments are reminiscent of concerns apparently raised by Charbonneau as to the authoritarian potential of 'ecologism';[34] a potential that is the subject of detailed investigation by Richard Ellis.[35]

It thus emerges that naturalness, as defined by processes that lack human and societal intervention – and specifically the abstract, instrumental interventions characteristic of industrialised societies – is valued because it symbolises autonomy from such forces. Although the proportion of people in Western countries who actually retreat from the modern world to the sanctuary provided by remote wilderness, rural isolation, and other cultures is quite small, rare is the person who has not entertained the romantic thought that they might escape the demands of society by returning to a simpler mode of existence. This cultural tendency to link nature to autonomy from society has a long history, stretching back to the ancient cultures of Greece and China. As noted by Fox, for example, "Lao-tse, the Chinese philosopher of the sixth century B.C., had advised the court to find relief from the artificiality of its experience in the bamboo groves."[36] Associated with these sentiments are the teachings of religious sects such

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[33] Thomas Heyd, "Themes in Latin American Environmental Ethics: Community, Resistance and Autonomy," *Environmental Values* 13 (2004): 234. Similar themes are also apparent in Bryan K. Walton and Conner Bailey, "Framing Wilderness: Populism and Cultural Heritage as Organizing Principles," *Society and Natural Resources* 18 (2005): 119-34.

[34] Cérézuelle, "Nature and Freedom," p. 325.

[35] Richard J. Ellis, *The Dark Side of the Left: Illiberal Egalitarianism in America*, (Lawrence: University Press of Kansas, 1998)

[36] Fox, *Against the Machine*, p. 123.

as the Amish and the Jains that salvation requires rejection of the trappings of modern society, the interest many have in the ruined monuments of past civilisations,[37] and, to return to an earlier point, popular fascination with dystopian visions of apocalypse,[38] particularly evident in groups such as Earth First![39] Yet even popular environmental authors like David Ehrenfeld admit to feeling a "secret comfort" upon hearing predictions of "widespread economic collapse and the crumbling of modern society."[40] Similarly, Michael Pyle 'likes the thought' that humans will inevitably become extinct, allowing all the "peaceful, dumb species" of the Earth to "go back to their business of life and death and evolution, unperturbed by busy-busy men."[41] These same motivations are likely to provide the foundation of that tendency within environmentalism to indulge in what Andrew Murphy describes as 'antimodernism' and 'the rhetoric of

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[37] Midas Dekkers (translated by Sherry Marx-MacDonald), *The Way of All Flesh: The Romance of Ruins*, (Gordonsville: Farrar, Straus and Giroux, 2000); Brigitte Desrochers, "Ruins Revisited: Modernist Conceptions of Heritage," *The Journal of Architecture* 5 (2000): 35-45; Christopher Woodward, *In Ruins*, (London: Vintage, 2002); Robert Ginsberg, *The Aesthetics of Ruins*, (Amsterdam: Rodopi, 2004).

[38] Mike Davis, *Dead Cities and Other Tales*, (New York: The New Press, 2002), pp. 361-86.

[39] Ellis, *The Dark Side of the Left*, pp. 257-70; Bron Taylor, "Green Apocalypticism: Understanding Disaster in the Radical Environmental Worldview," *Society & Natural Resources* 12 (1999): 377-86.

[40] David Ehrenfeld, *The Arrogance of Humanism*, (New York: Oxford University Press, 1981), p. 221.

[41] Pyle, *Wintergreen*, p. 277.

decline'.[42] It can also be seen to contribute to the appeal of such notions as 'nature knows best' and the 'balance of nature', which hold that human intervention in natural systems is unlikely to be anything other than detrimental.[43] Such beliefs are associated with what Eugene Hargrove describes as "environmental therapeutic nihilism".[44]

Claims that the environmental crisis is fundamentally caused by human captivation with technology and associated metaphysical disconnection from nature are ubiquitous. Yet the motive described in this chapter suggests that, while this blame is not misplaced, the popular feeling generated by the environmental crisis is not simply the result of concern for nature, but is greatly influenced by dissatisfaction with the technocratic orientation and related trends within society aside from any concern for nature. Heyd argues that the desire for community autonomy from controlling social forces can be located within the sphere of environmental ethics because it "directly or indirectly takes into consideration the natural environment or certain parts of it".[45] However, acknowledging the relationship between the value of nature and dissatisfaction with the

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[42] Andrew R. Murphy, "Environmentalism, Antimodernism, and the Recurrent Rhetoric of Decline," *Environmental Ethics* 25 (2003): pp. 79-98.

[43] Barry Commoner, *The Closing Circle: Nature, Man, and Technology*, (New York: Knopf, 1971), p. 41.

[44] Eugene C. Hargrove, *Foundations of Environmental Ethics*, (Englewood Cliffs: Prentice Hall, 1989), pp. 137-61.

[45] Heyd, "Themes in Latin American Environmental Ethics," p. 235.

abstractions of modern society leads to the insight that the theme of human autonomy is itself one of the foundations of environmental ethics.[46]

VI. ASSOCIATED FEELINGS OF CONNECTION

It can be seen that valuing nature for its autonomy from society, on the basis of desiring autonomy from society for oneself, could give rise to a corresponding sense of connection or identification with nature. For example, Jack Turner describes once being moved to violence when witness to the casual humiliation of a caged mountain lion by onlookers. However, rather than being motivated purely by empathy for all those various facets of the unfortunate creature's existence, he seems primarily driven by the conviction that the animal had a right to freedom and respect, which was grounded in his own "identification with wild nature".[47] There appear to be two sources of connection here. One coalesces around the shared quality of autonomy from society, the other around the shared quality of wildness. Many authors have reflected on the latter; R. Edward Grumbine, for example:

> Humans, too, are wild... Our fundamental wildness presents itself continually: we breathe without effort; we exchange matter and energy with the world; we are aroused by sudden sound and

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[46] This is reflected in Gerrie's suggestion that the focus of environmental ethics on nature is, perhaps, unwarranted. See James B. Gerrie, "Environmental Ethics: Should We Preserve the Red Herring and Flounder?" *Journal of Agricultural and Environmental Ethics* 16 (2003): 73.

[47] Turner, *The Abstract Wild*, p. 43.

> movement; we wonder at lightning storms and cloud patterns. Wildness in humans might be characterized as the self-regulating aspects of the 'body' interacting with the unconscious depths of the 'mind'...[48]

Nichols Fox also notes that "the very word *wildness*... implies other. It is what we are not; something distanced from all that we are. But this is not, in fact, true. Our orderliness is an illusion; we are as wild as the rest of nature, but we prefer to think of our lives as under control."[49] Similar ideas are expressed by Gary Snyder:

> Our bodies are wild. The involuntary quick turn of the head at a shout, the vertigo at looking off a precipice, the heart-in-the-throat in a moment of danger, the catch of the breath... The body does not require the intercession of some conscious intellect to make it breathe, to keep the heart going. It is to a great extent self-regulating, it is a life of its own... The conscious agenda-planning ego occupies a very tiny territory, a little cubicle somewhere near the gate, keeping track of some of what goes in and out (and sometimes making expansionistic plots), and the rest takes care of itself. The body is, so to speak, in the mind. They are both wild. [50]

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[48] R. Edward Grumbine, "Wildness, Wild Use, and Sustainable Development," *Environmental Ethics* 16 (1994): 232.

[49] Fox, *Against the Machine*, p. 254.

[50] Gary Snyder, *The Practice of the Wild*, (New York: North Point Press, 1990), p. 16.

Identification on the basis of wildness, and celebration of this shared quality, implies rejection of rational agency and a willingness to forego the benefits arising from rational consideration of cause and effect. It could be linked to an opposition to science, to anti-intellectualism, and to the sort of scepticism displayed toward factual evidence described by Dick Taverne in his book *The March Of Unreason.*[51] Identification on this basis is problematic insofar as it cannot provide consistent support for any change in human policies toward nature. While it can provide the basis for calls to scale back the activities of such instrumentalist entities as corporations, government bureaucracies, or scientific research institutes, it can make no allowance for the positive actions that such entities might bring about. Further, there can be no allowance made for the environmental impact that results through spontaneous human behaviour. It is interesting to note that environmentalists generally seek a dramatic reduction in spontaneous behaviour, exhorting people to remain constantly vigilant as to the potential ecological impact of any action taken.

Identification on the basis of autonomy is far less contradictory as it requires no such rejection of rational agency. However, it might be feared that by upholding the value of the autonomy of the individual, the motive described in this chapter might encourage a laissez-faire approach to individual behaviour, associated with groups such as the Wise Use Movement. Yet, identification on this basis is crucially associated with respect for the autonomy of nature, and therefore the scope of individual

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[51] Dick Taverne, *The March Of Unreason: Science, Democracy, and The New Fundamentalism*, (Oxford: Oxford University Press, 2005)

autonomy is considerably diminished in situations where the autonomy of nature is threatened by the individual.

VII. AESTHETIC AND SPIRITUAL VALUES

Before proceeding to the next chapter, some comment is required on aesthetic and spiritual values. Both are frequently cited as important sources of nature's value, are non-instrumental and subjective, yet are not specifically represented by motives within the axiology of inherent value.

In the previous chapter it was noted that a sense of 'spiritual' value can be associated with the first, second and third motives, and it seems reasonable to suggest that a deep respect for the autonomy of nature, arising from the fourth motive, could also have spiritual overtones. Spirituality, in this context, seems to relate to sensations of value that are largely emotive, rather than having been derived from rational consideration of religious meaning. As suggested by Kay Milton, "the term 'sacred' can be applied to anything whose value is not based on reason, but is experienced directly, through the senses and, when necessary, asserted dogmatically. Sacredness is thus linked to aesthetics, to affective experience."[52] Similarities between spiritual, aesthetic, and emotive sensations of value are also implied by Stan Godlovitch's comments on aesthetic value:

> The value found in aesthetic response to nature has numerous irreducible sources... Newton was struck by the miraculous

[52] Kay Milton, "Nature is Already Sacred," *Environmental Values* 8 (1999): 440.

> underlying simplicity and order of nature; many ecologists are overwhelmed by its impenetrable complexity and arbitrariness. Some take delight in the ever-changing sensuous variety nature offers; others in timeless patterns and regularity. John Muir found in nature a deep spiritual and transcendental tonic. Others find kindred neo-religious transport in the great stream of Life and the sweep of evolution. Some find love, endearment, and belonging; others find intellectual savouring; yet others find a seductive darkness. For some nature elicits amazement and wonder; for others enchantment; for others still awe and emotional richness. There is no one final fitting affective or intellectual response, no definitive hedonic or cognitive payoff, and with that no authoritative prescriptions from some master-race of nature critics and connoisseurs to be followed obediently by some underclass of adulatory bumkins. There is no codifying of the proper objects and qualities, no privileged categories, no canon to worship, no tests to pass or club to join. There is no 'institution' regulating aesthetic response to nature and no 'nature-world' born in aesthetic theory... At least, no one who encounters nature aesthetically is under any constraint to enter into any such codification pacts because, whatever these pacts, none is privileged and none is necessary.[53]

However, aesthetic and spiritual values are not the same thing. Spiritual values are associated with the notion that there exists a presence in the world, beyond the realm of human rationality, that is somehow responsible for the experience of value. Seeking rational explanations for such experiences seems unnecessary and perhaps even undermines the experience of value. Aesthetic values, on the other hand, may be

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[53] Stan Godlovitch, "Valuing Nature and the Autonomy of Natural Aesthetics," *British Journal of Aesthetics* 38 (1998): 184-185.

rationalised, and are not necessarily the result of supernatural creative forces.

VIII. EFFICIENCY AND HEALTH

It should also be noted that the motives underlying inherent values in nature can be supported by other important sources of human motivation that do not, themselves, give rise to the sense that nature is valued 'for itself'. One of these is the motive of efficiency. It is apparent that the inclination of many people to be efficient – to minimise both their expenditure of energy and resources and production of waste – is not a purely instrumental goal. It is often sought without any particular regard for self-benefit, and can therefore be linked to inherent value. Household recycling, for example, is an activity enthusiastically carried out by billions of people around the world. In developing countries, this is usually through necessity and therefore reflects the influence of instrumental values. However, for the millions of people in Western societies for whom recycling provides no economic return, this activity is often undertaken inherently. Little instrumental calculation accompanies the desire to recycle, except, perhaps, for a vague sense that it is good for nature. It seems that a more plausible explanation for this desire is an underlying inclination to efficiency and desire to minimise waste.

Efficiency is not necessarily compatible with respect for nature. Energy use, for example, can be reduced by dumping raw sewage into the sea, rather than operating systems for its reticulation and treatment. However, for those whose values reflect some combination of the four motives

described above, efficiency encourages behaviour that is significantly compatible with respect for nature, such as in the case of recycling. The influence of efficiency can be found in the historical development of environmental sentiments. Eugene Hargrove, for example, indicates that naturalists writing in the nineteenth century were critical of those who killed animals only when it was "wanton" and "served no useful purpose."[54] This could be explained as evidence of a purely instrumental view of nature as a resource to satisfy human needs. However, Hargrove does not think so, and presents three other explanations, including one that corresponds to the intellectual interest motive described in the previous chapter.[55] Another explanation is provided by the common human inclination to favour efficiency over wastefulness. It seems likely that contemporary attitudes toward the 'wanton' destruction of nature continue to be informed by this motive.

The motive of efficiency is closely tied to the desire for autonomy from the abstractions of modern society, for through greater efficiency an individual may reduce their dependence on societal institutions. This is apparent in the goal of many alternative communities to attain self-sufficiency or to limit their consumption to resources available locally, thereby minimising the energy use associated with transport. At the same time, efficiency is a major goal of many of the bureaucratic and profit-oriented institutions that are implicated in the undermining of individual autonomy. Efficiency in this context is tied to maximising profit rather than

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[54] Hargrove, *Foundations of Environmental Ethics*, p. 114.

[55] *Ibid.*, pp. 115-24.

independence. The apparent significance of these two 'ends' would seem to suggest that efficiency is an instrumental rather than an inherent value, supporting Sagoff's contention that "efficiency has no normative claim or moral worth" aside from those relating to instrumental considerations.[56] However, just as the desire for autonomy can provide subconscious motivation for valuing wild nature, it may also provide subconscious motivation for valuing efficiency in one's own affairs. Hence, efficiency can be valued 'for itself'; that is, inherently.

The motive of efficiency is useful in helping to explain nuances in environmental behaviour. Another supporting motive of this kind is health. The desire to be healthy is fundamental to human nature. As with efficiency, this desire is not necessarily compatible with respect for nature. For example, increased human life expectancy resulting from the application of modern medicine contributes significantly to the erosion of nature on a global scale. However, in other ways, such as in supporting efforts to reduce pollution and the threat of nuclear conflict, the motive of health is of great benefit to the survival of nature.

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[56] Mark Sagoff, *The Economy of the Earth: Philosophy, Law, and the Environment*, (Cambridge: Cambridge University Press, 1988), p. 107.

IX. CONCLUSION

The idea that nature has some symbolic capacity as a counterpoint to society underlies a vein of criticism that is ubiquitous within environmental discourse, directed toward human progress, technological dependence, and the disempowerment of the individual by capitalism, corporations and the state. The role of nature within such discourse is generally that of the victim of anthropogenic endeavour. However, this perspective overlooks the possibility that disappointment with contemporary Western society is not only generated by concern for nature, but that concern for nature might itself be generated by dissatisfaction with society. This dissatisfaction constitutes the fourth motive of the axiology of inherent value. There are a number of reasons why nature might resonate with those dissatisfied with the abstractions of modern society, not least being that nature provides a place for physical escape from society, and that nature is, itself, autonomous from society.

This concludes Part C of the thesis, which has been dedicated to a systematic articulation of the non-instrumental values associated with nature and naturalness. In Part D these motives are examined to determine the potential for conflict between the conservation of biodiversity and the values associated with nature.

PART D

HOW DO THE VALUES ASSOCIATED WITH BIODIVERSITY AND NATURE CONFLICT?

Chapter Ten

MOTIVE CONFLICT AND CONVERGENCE: ANIMAL WELFARE

The idea that environmental ethics and animal liberation are conceptually distinct... would come as a surprise to many people concerned about the human domination of nature. For one thing, environmentalists and animal liberationists have many of the same enemies: those who dump poisons into the air and water, drive whales to extinction, or clear rainforests to create pastures for cattle, to name just a few. Moreover, however one traces the history of the environmental movement, it is clear that it comes out of a tradition that expresses strong concern for animal suffering and autonomy. Certainly both the modern environmental and animal liberation movements spring from the same sources in the post-World War II period: a disgust with the sacrifice of everything else to the construction of military machines, the creation of a culture which views humans and other animals as replaceable commodities, and the prevailing faith in the ability of science to solve all of our problems... Even people today who identify themselves as environmentalists are likely to be as concerned about spotted owls as old growth forests and to think that vegetarianism is a good idea.

Dale Jamieson (1998)[1]

It is the passionate, empathetic response, based on connection with the non-human world, that motivates concern for its conservation. It is this that needs to be nurtured. Reflective empathy and a sense of connection is the life-blood of conservation. But policies articulated in purely scientific

[1] Dale Jamieson, "Animal Liberation is an Environmental Ethic," *Environmental Values* 7 (1998): 42.

terms, and those that prescribe the routine culling of sentient animals, involve shutting down compassion and empathy, and distancing rather than connecting.

Kate Rawles (2004)[2]

I. INTRODUCTION

The goal of Part D, comprising chapters nine and ten, is to explore whether a management focus on the conservation of biodiversity is compatible with protecting the values associated with nature. This follows on from Parts B and C, which described in detail the values associated with biodiversity, and with nature and nonhuman life more generally. The question of compatibility will first be considered in relation to the axiology of inherent value. This involves matching the values associated with a focus upon the conservation of biodiversity with the motives comprising the axiology, and then examining the potential for conflict and/or convergence between them.

For the sake of brevity, each of the motives comprising the axiology will be assigned an abbreviation, as follows:

- ***Connection*** will refer to motive one, being the experience of connection with nonhuman life.
- ***Scientific Concern*** will refer to motive two, which describes the concern for species, ecosystems and ecological processes generated by intellectual interest in nature.

[2] Kate Rawles, "Biological Diversity and Conservation Policy," in *Philosophy and Biodiversity*, ed. Markku Oksanen and Juhani Pietarinen (Cambridge: Cambridge University Press, 2004), p. 214.

- ***Larger Context*** will refer to motive three, being respect for the larger context embodies by nature.
- ***Autonomy*** will refer to motive four, which describes dissatisfaction with the abstractions of modern society, and a subsequent desire for autonomy from the sources of such discontent.

Two examples of conflict surrounding biodiversity conservation are then examined, again to assess the potential for conflict and/or convergence. Conflict associated with concern for animal welfare advocates will be examined later in this chapter, while in chapters eleven and twelve, the conflict between restorationists and preservationists will be considered.

II. MOTIVE COMPATIBILITY, CONFLICT AND CONVERGENCE

Through the course of Part B, it was found that instrumental justifications for the conservation of biodiversity were subject to various flaws, and, in any event, those most passionate in their advocacy on behalf of biodiversity are generally motivated by non-instrumental values. The notion that biodiversity has objective intrinsic value was found to be a dubious proposition, except in situations where a diversity of life is more beneficial to the overall flourishing of individual organisms in a given area; a caveat linked to other ideas unlikely to appeal to conservationists. It seemed more likely that claims for the intrinsic value of biodiversity reflected either an intense intellectual interest in, and associated concern for nonhuman life, or the mistaken impression that 'biodiversity' was

equivalent to the totality of nonhuman life and nature, the intrinsic value of which can be more persuasively argued.

In relation to the motives comprising the axiology of inherent value, the non-instrumental value of biodiversity is most closely matched to *Scientific Concern*. It can also be associated with the motive of *Larger Context*, insofar as the diversity of life is believed to be a manifestation of some larger context and therefore deserving of respect and protection from threats. With this in mind, it can be surmised that people whose principal motives are *Connection* or *Autonomy* might find cause to object to the dominant place of biodiversity within environmental legislation and management systems. This suggestion appears to be verified by the sort of debates that tend to develop among those who value nature 'for itself'. One of these relates to the killing of sentient animals in the name of conservation, while the other is generated by questions concerning the naturalness of ecological restoration. It is apparent that the killing of sentient animals is most strongly opposed by people whose principle motive is *Connection*, while a deep concern for naturalness is associated with the motive of *Autonomy* (see Table One).

Table One: The potential for conflict between motives.

	motive one *Connection*	motive two *Scientific Interest*	motive three *Larger Context*	motive four *Autonomy*
How does motive conflict with the *conservation of biodiversity*?	Inspires concern for individual organisms.	NO CONFLICT	Inspires respect for the autonomy of nature.	Inspires respect for the autonomy of nature.
How does motive conflict with *concern for animal welfare*?	NO CONFLICT	Inspires concern for species and ecosystems rather than individuals.	Inspires concern for the permanent loss of species and ecosystems.	Discourages human intervention to reduce suffering.
How does motive conflict with the *preservation of wildness*?	Encourages human intervention to reduce suffering.	Encourages human intervention to conserve biodiversity.	Encourages human intervention to reduce suffering and conserve biodiversity.	NO CONFLICT

However, these two prominent debates are not totally polarised. As is discussed below and in the succeeding chapters, there is considerable convergence between the opposing positions. In relation to the axiology, this can be explained by the varying influence of dominant and subdominant motives. Those who value nature 'for itself' are likely to hold all four motives to be important, while also finding one of these motives to be of most importance. Actions dictated by the dominant motive will take precedence over the influence of the subdominant motives. However, there

are many situations where the dominant and subdominant motives will be in agreement (see Table Two), and it is in these situations that otherwise conflicting outlooks may find common ground.

Table Two: The potential for convergence between motives.

	motive one *Connection*	motive two *Scientific Interest*	motive three *Larger Context*	motive four *Autonomy*
How is motive consistent with the *conservation of biodiversity*?	Inspires concern on the basis of human-nature ecological relationships.	Inspires concern for the loss of diversity.	Inspires concern for the permanent loss of components of biodiversity.	Inspires concern for 'native' components of biodiversity.
How is motive consistent with *concern for animal welfare*?	Inspires concern for individual organisms.	Inspires concern for the loss of components of biodiversity.	Inspires concern for the loss of nonhuman life.	Inspires concern for the freedom of wild animals.
How is motive consistent with the *preservation of wildness*?	Inspires concern on the basis of shared autonomy from society.	Inspires concern for most human intervention in natural processes.	Inspires respect for the autonomy of nature.	Inspires respect for the autonomy of nature.

One such situation in which agreement could be expected between otherwise conflicting positions is when natural areas are threatened with destruction by development projects. Opposition to such projects is consistent with each of the four motives. In each of the case studies,

examination of the conflicting positions will be followed by consideration of the areas of convergence between these positions.

Before proceeding it should be noted that the influence of *Larger Context* on the debates generated by a conservation focus on biodiversity will not be examined. In such debates, *Larger Context* can provide support for either position, as indicated in Table Two. In this regard, *Larger Context* always functions as a subdominant motive; subservient to one of the other motives or to a particular spiritual or religious perspective.

III. THE ANIMAL WELFARE DEBATE

The potential for conflict between species conservation and animal welfare attracted the early attention of environmental philosophers. One of the first papers to broach such issues was published by J. Baird Callicott in 1980.[3] He suggested that the extension of human rights to sentient animals was incompatible with the claim that non-sentient life, and collective entities such as species and ecosystems, were deserving of moral consideration.[4] In highlighting this distinction, Callicott's ethical priorities were firmly oriented towards the protection of species and ecosystems; a position known as 'ethical holism'. His opponents were authors like Tom Regan, who argued that the rights of the individual animal were paramount, and that infringing these rights for the good of the biotic community amounts

[3] An overview of this debate is provided by Jamieson, "Animal Liberation is an Environmental Ethic," pp. 41-46.

[4] J. Baird Callicott, "Animal Liberation: A Triangular Affair," *Environmental Ethics* 2 (1980): 311-38.

to 'environmental fascism'.[5] This debate has not diminished in relevance. Animal welfare groups remain opposed to a variety of conservation practices, including the culling of sentient animals, the removal of individual animals from the wild, and interference with the lives of wild animals for monitoring purposes. Kate Rawles has characterised the participants in the debate in the following way:

> The conservation movement draws on science, and particularly ecology and conservation biology, for authority, validation, and direction. While not advocating avoidable suffering or cruelty, it may dismiss what it sees as excessive concern for individual animals as sentimental. Conservationists often view the animal welfare movement as overly emotional, irrational and, in the end, misguided... The animal welfare movement draws on philosophy and particularly ethics for its authority and validation. It can perceive conservationists as excessively managerial, God-playing, ruthless, and generally in the grip of a heartless science – and, ultimately, unethical.[6]

Two recent examples of conflict between conservationists and 'welfarists' are from Anacapa Island, off the coast of California, and Guy Fawkes River National Park in northern New South Wales, Australia.[7]

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[5] Tom Regan, *The Case for Animal Rights*, (Berkeley: University of California Press, 1983), pp. 359-63.

[6] Rawles, "Biological Diversity," p. 202.

[7] A number of examples from the United Kingdom are provided by Kay Milton, including the particularly controversial plans to cull ruddy ducks. See Kay Milton, *Loving Nature: Towards an Ecology of Emotion*, (London: Routledge, 2002), pp.

In October 2001, the animal rights activist, Rob Puddicombe, was observed distributing an antidote to rat poison on Anacapa Island by national park rangers, who were themselves distributing the poison in an attempt to eradicate the black rat, whose presence was threatening native bird and mouse species. Puddicombe's actions were part of a broader campaign against the culling of introduced animals on many islands in the area, and he was subsequently charged with 'feeding wildlife' and 'interfering with a federal function'. In an article in the *Washington Post*, he was reported as saying, "To me, the idea of species is just an abstract concept. Species go extinct all the time... That's the philosophical difference. These animals are here and alive now. Their lives have value." Puddicombe's primary concern was the pain experienced by the rats and other animals that ingested the poison, leading to his impossible-to-implement suggestion that the rats be physically removed from the island. The president of The Fund for Animals, an animal rights group that also became involved, suggested that Puddicombe was being harassed "because he dares confront the Park Service and its religious fervor to restore lands to some earlier, pristine state at the cost of the inhumane slaughter of pigs,

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123-28; Kay Milton, "Ducks out of Water: Nature Conservation as Boundary Maintenance," in *Natural Enemies: People-Wildlife Conflicts in Anthropological Perspective*, ed. John Knight (London: Routledge, 2000), pp. 229-46.

goats, sheep, rabbits and rats."[8] Puddicombe was acquitted of the charges in July 2003 as there was insufficient evidence for a conviction.[9]

The second example comes from Australia, where considerable friction between conservationists and welfarists has been generated by the presence of wild horses, or 'brumbies', in national parks. These animals can degrade the physical environment in a variety of ways and there has been persistent pressure from conservationists for their removal from protected natural areas. One such area is the Guy Fawkes River National Park. During the 1990s, the local brumby population had increased to such a level that it was considered to be a major conservation problem. Attempts were made to trap the horses using nets and mustering techniques, although this proved costly and resulted in considerable stress to the animals. In 2000, drought conditions and bushfire had resulted in large numbers of horses congregating in the small remaining areas of suitable pasture. This increased the likelihood of a successful cull, and also sparked concerns that the horses were in danger of starving to death. Six hundred animals were subsequently shot from a helicopter.[10] These actions generated widespread negative publicity because of the distress experienced by the horses during the cull and reports that some horses were left to die after being wounded. In response, the government declared a state-wide ban on the aerial culling

[8] William Booth, "On California Islets, a Clear Case of Rat and Wrong?" *Washington Post*, 5 January 2003: A03. See also Kevin Krajick, "Winning the War Against Island Invaders," *Science* 310 (2005): 1410-13.

[9] Brian Carnell, "Man Acquitted of Aiding Rats," *AnimalRights.net*, 15 September 2003: http://www.animalrights.net/archives/year/2003/000325.html.

[10] Anthony W. English, *Report on the Cull of Feral Horses in Guy Fawkes River National Park in October 2000*, (Sydney: NSW National Parks and Wildlife Service, 2000)

of horses.[11] The Royal Society for the Prevention of Cruelty to Animals (RSPCA) also began legal proceedings against the National Parks and Wildlife Service, although it later dropped all but one of the charges.[12] With pressure still remaining for the horses to be eliminated from the park there was renewed effort to trap the horses humanely. An alternative method was trialed that proved successful, and a program is currently underway to remove the entire population from the park. The costs of the exercise will be partially recouped through sale of the horses.[13]

The position taken here is that conflict over these issues is generated by differences in the motivating role played by *Connection* and *Scientific Concern*. Welfarists are primarily motivated by *Connection* and so are less inclined to elevate the conservation of global biodiversity above the welfare of individual animals. Conservationists are primarily motivated by *Scientific Concern* and so are more likely to elevate the conservation of global biodiversity above the welfare of individual animals. However, it is hypothesised that the two positions are not diametrically opposed as they share the same basic set of values, generated by the four motives

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[11] Peta Seaton and Bob Debus, "Guy Fawkes River National Park Animal Slaughter," *NSW Legislative Assembly Hansard*, 2 November 2000; Andrew Fraser, Bob Debus and Peter Webb, "National Parks Wild Horse Control," *NSW Legislative Assembly Hansard*, 26 June 2002. See also http://www.savethebrumbies.org, http://www.brumbywatchaustralia.com, http://www.kbrhorse.net/news/brumby01.html, http://www.colongwilderness.org.au

[12] National Parks Association of NSW, "Horse Cull Court Settlement Vindicates National Parks," Media Release, 3 July 2002. Available from the website of the National Parks Association (http://www.npansw.org.au/media).

[13] James Woodford, "Hay Presto: Brumbies Wild About Feed Luring," *Sydney Morning Herald*, 25 June 2005, n.p.

comprising the axiology of inherent value. Consequently, the two positions will often converge on issues relating to the protection and management of natural areas, whereas conflict will only arise when biodiversity is threatened by actions taken to prevent harm to individual animals, or when individual animals are harmed in order to conserve biodiversity.

Some degree of convergence between the two positions is apparent in the examples described above. In subsequent legal action against the United States National Park Service, The Fund For Nature suggested that their primary concern was for the harm that might be caused to the native Anacapa deer mouse rather than the black rats.[14] In the brumby example, it is apparent that the suffering of the horses was one of the issues considered by the park authorities in their decision to carry out the cull. However, it should be noted that concern for animal welfare is, to some extent, mandated by law. Although the concept of biodiversity might dominate contemporary environmental legislation, such legislation sits alongside often pre-existing laws safeguarding animal welfare. Consequently, in many countries, the activities of scientists and natural area managers must first be approved by animal ethics committees, or at least demonstrate some sensitivity to such concerns.

To emphasise the potential for convergence between the two positions, we will now consider their respective views regarding the moral consideration due to wild animals in natural circumstances.

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[14] The Fund for Animals, "Park Service Project Could Exterminate Rare Deer Mouse," *San Diego Earth Times*, November 2002: http://www.sdearthtimes.com/et1102/et1102s5.html.

IV. CONVERGENCE – WILD ANIMALS IN NATURE

An important point of difference between conservationists and welfarists has historically been the moral considerability of individual animals in the wild. However, on this issue there is greater convergence between the two positions than many accounts would suggest.

In the 1980s, conflict on this issue was generated by philosophers, such as Tom Regan and Peter Singer, who claimed, or at least implied, that domesticated and wild organisms were deserving of equal moral consideration. As explained by Leslie Thiele, such a perspective gives rise to numerous problems:

> the biocentric acknowledgement of equal rights for all life may entail not only noninterference with other species, but, quite ironically, humanitarian aid for them. Arne Naess observes that "if a rat is discovered in an inaccessible ventilator, it is clearly cause to warn the SPCA to come and end its suffering – by putting it out of its misery." To be consistent on this score, however, should we not also send SPCA squads into the sewers to save rats from early demise... after severe storms? By deep ecological standards, sewer rats merit consideration just like the whales recently trapped under Arctic ice did... But what of those fish and microorganisms, in this latter case, that were robbed of a bountiful feast of whale meat as a result of our 'humanitarian' intervention. Must we also compensate them for their loss of dinner? Furthermore, could we accomplish this

duty without taking yet other life in the process? The practical and theoretical conundrums mount.[15]

Similarly, Callicott has noted that the rigid application of animals rights might result in efforts to remove predators from the wild: "if carnivorous animals could be rounded up, housed comfortably in zoos, fed soyburgers, sterilized, and allowed to die natural deaths, then only herbivorous animals would remain in nature and the total amount of pain and suffering might be vastly reduced."[16] An alternative suggestion, seriously proposed by Gregg Easterbrook, is that wild animals be genetically modified to make carnivorous behaviour unnecessary.[17] Given the scale of disruption that could be expected from such actions, and the insurmountable conundrums of the sort described by Thiele, there are few animal ethicists who continue to suggest that domesticated and wild animals are morally equivalent.

Within the animal welfare literature, the ethical distinctiveness of wild animals has been incorporated into a number of approaches that potentially converge with the interests of conservationists. One example is 'animal integrity', which describes such attributes as the genetic profile, social habits, and habitat, of an animal in natural circumstances. The significance of animal integrity is that its value is inversely proportional to the extent of

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[15] Leslie Paul Thiele, 'Nature and Freedom: A Heideggerian Critique of Biocentric and Sociocentric Environmentalism,' *Environmental Ethics* 17 (1995): 177.

[16] J. Baird Callicott, "The Search for an Environmental Ethic," in *Matters of Life and Death*, second edition, ed. Tom Regan (New York: Random House, 1986), p. 398.

[17] Gregg Easterbrook, *A Moment on the Earth: The Coming Age of Environmental Optimism*, (Harmondsworth: Penguin, 1995), p. 671.

human modification to these attributes, even if such modifications were to increase the pleasure, and/or decrease the pain experienced by the animal. The exception is in cases where animals have suffered an accidental injury, in that intervention to heal such injury does not diminish animal integrity.[18] Animal integrity is increased by ensuring that the conditions experienced by animals in captivity are such that their behaviour is similar to what would be expected if they were not in captivity, even if these conditions give rise to additional threats than would be faced in a more controlled environment. The concept can be practically applied to the task of ensuring that the environment created for captive animals is least detrimental to their psychological well-being.[19] However, this represents a constrained, pragmatic interpretation of the concept. Animal integrity is fully realised only in situations where the animal is able to live wild and free, or, in the case of domesticated animals, is subject to the minimum level of human stewardship required for a healthy and satisfying life. This approach is potentially compatible with the interests of conservationists insofar as it could be argued that the natural habitat requirements of animal integrity require ecological restoration, even in situations where such restoration involves the culling of sentient animals. On Anacapa Island, for example,

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[18] Bernice Bovenkerk, Frans W.A. Brom and Babs J. van den Bergh, "Brave New Birds: The Use of 'Animal Integrity' in Animal Ethics," *The Hastings Center Report* 32 (2002): 16-22. See also J. Vorstenbosch, "The Concept of Integrity: Its Significance for the Ethical Discussion on Biotechnology and Animals," *Livestock Production Science* 36 (1993): 109-12.

[19] Albert W. Musschenga, "Naturalness: Beyond Animal Welfare," *Journal of Agricultural and Environmental Ethics* 15 (2002): 173-79.

the extermination of rats might be justified by the increase in animal integrity of the other sentient species on the island.

Other approaches include those suggested by Jac Swart and Gary Varner. Swart suggests that some management of wild animals is required, although only in relation to forms of suffering that have been exacerbated by humans. Management of this sort, which he describes as 'non-specific care', is targeted toward the well-being of populations rather than individuals, and can include "controlled hunting in order to prevent starving of animals due to unnatural population growth".[20] Varner also approves of hunting, although he does not restrict this to 'unnatural' conditions. Instead he defends the 'therapeutic hunting' of what he describes as 'obligatory management species'. Such a species is one "that has a fairly regular tendency to overshoot the carrying capacity of its range, to the detriment of future generations of it and other species". His examples of 'obligatory management species' are elephants, and "hooved mammals like... deer, elk, and bison", while his examples of species that are not 'obligatory' are doves, rabbits, squirrels, and quail.[21] The principal distinction here is that the former are larger and more capable of causing lasting damage to their habitat. It is apparent that Varner's is a consequentialist approach that seeks to maximise the long-term viability of the ecosystem in order to benefit the greatest number of individuals. Again,

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[20] Jac A.A. Swart, "Care for the Wild: An Integrative View on Wild and Domesticated Animals," *Environmental Values* 14 (2005): 258.

[21] Gary Varner, "Can Animal Rights Activists Be Environmentalists?" in *People, Penguins, and Plastic Trees: Basic Issues in Environmental Ethics*, second edition, ed. Christine Pierce and Donald VanDeVeer (Belmont: Wadsworth, 1995), p. 258.

both of these proposals provide conservationists with additional grounds for pursuing their species-oriented policies. As with animal integrity, both approaches provide some grounds for ecological restorations that require the removal of certain species from an ecosystem.

Compromise on the part of welfarists is also reflected in the guidelines prepared by the Universities Federation for Animal Welfare (UFAW) regarding the reintroduction into the wild of animals bred in captivity. As reported by Benjamin Beck, these guidelines include the following: "If there are good reasons for believing that a viable wild population can be established from the reintroduced animals then *the risk to an individual may be compensated for by the gain for conservation.*"[22] This suggests a willingness to prioritise the conservation of biodiversity over safeguarding animal welfare in certain circumstances.

Welfarist approaches that diminish the level of concern due to individual wild animals are not without their flaws. For example, the high value placed on animal integrity reflects a fundamentally anthropocentric perspective on well-being. As noted by Albert Musschenga, there is a considerable distinction between valuing animal integrity as a means for improving the welfare of captive animals, and valuing animal integrity because of the romantic symbolism associated with the behaviour and appearance of wild animals.[23] Such concerns are reiterated by Bovenkerk *et al.*, who question the 'objectivity' of animal integrity.[24] This issue is

[22] Benjamin Beck, "Reintroduction, Zoos, Conservation, and Animal Welfare," in *Ethics on the Ark*, ed. Norton, *et al.*, p. 157.

[23] Musschenga, "Naturalness: Beyond Animal Welfare," p. 179.

[24] Bovenkerk, *et al.*, "Brave New Birds," pp. 17-21.

discussed further in chapter twelve in relation to the anthropocentrism inherent in the desire to preserve wildness despite the risk of losing species.

Another example of the flaws apparent in the welfarist approaches to wild nature is Varner's identification of 'obligatory management species'. An important aspect of his approach is concern for the welfare of future generations of larger mammals, which he argues is compromised to a greater extent, compared with other species, because of the increased likelihood that they will degrade their habitat. But, in reality, the generation of large mammals to follow that which exceeded the carrying capacity will be considerably reduced in number because of the limited resources available. Hence, individuals of this subsequent generation will not necessarily experience a less-satisfying life. This would appear to invalidate Varner's criterion for distinguishing 'obligatory management species'. An underlying explanation for his approach might be that Varner is attempting to rationalise the increased concern typically felt for larger species. Such concern arises because they are more 'charismatic' and, by virtue of their size, we are more likely to be aware of their suffering.

V. EXPLANATIONS FOR CONVERGENCE

As noted above, the convergence between the conservationist and welfarist positions can be explained by the different priorities attached to certain values within a common value set. Consequently, although conservationists prioritise *Scientific Concern* they remain influenced by *Connection*, and vice-versa for welfarists. Further, both conservationists and welfarists will

be influenced to some extent by *Autonomy*, whereby dissatisfaction with the abstractions of society gives rise to feelings of guilt in instances where the instrumental forces characteristic of contemporary society have resulted in harm to nonhuman life. However, in instances where suffering is the result of natural causes, the wild autonomy of the ecosystem is viewed as being more significant than the welfare of individual 'components' of the ecosystem.

The influence of *Autonomy* is apparent in the argument employed by Callicott to rationalise ambivalence toward suffering in the wild:

> The natural world as actually constituted is one in which one being lives at the expense of others. Each organism, in Darwin's metaphor, struggles to maintain its own organic integrity... To live *is* to be anxious about life, to feel pain and pleasure in a fitting mixture, and sooner or later to die. That is the way the system works. If nature as a whole is good, then pain and death are also good.[25]

Similarly, Bryan Norton notes that although conservationists value individual wild animals:

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[25] Callicott, "Animal Liberation: A Triangular Affair," p. 333. Elliot Sober points out that, in this statement, Callicott appears to affirm the fallacious notion that whatever is 'natural' is right; a notion that is discussed in detail by Simon Hailwood. See Elliot Sober, "Philosophical Problems for Environmentalism," in *The Preservation of Species: The Value of Biological Diversity*, ed. Bryan G. Norton (Princeton: Princeton University Press, 1986), pp. 180-84; Simon Hailwood, *How To Be a Green Liberal: Nature, Value and Liberal Philosophy*, (Chesham: Acumen, 2004), pp. 57-88.

> we value their wildness more; to respect their wildness is, in effect, to refrain from placing a moral value on their welfare or their suffering... It is to treat them as a separate community, one with which we limit our interactions in order to encourage its autonomy from our own society. We also value wild animals as part of natural processes. I believe that our interactions with animals in the wild take on a moral dimension only at the population and species level, not at the individual level.[26]

However, both these responses overlook another possibility, being that the lack of moral consideration for wild animals in natural circumstances might be the product of circumstance. Most people in contemporary western societies are rarely exposed to suffering in the wild, and when they are, such as while viewing a nature documentary, during a chance encounter in a national park, or when a cat is seen playing with a soon to be eaten bird, the fate of the wild animal often concerns them. At this point, the motive of *Connection* asserts itself. This explanation bears some relation to Callicott's later suggestion that the lower priority attached to the welfare of individual wild animals results from their being less integrated within our evolved understanding of community than are domesticated animals.[27] However, reference to evolution here is superfluous. Someone who has equal contact with wild and domesticated animals may be just as

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[26] Bryan Norton, "A Broader Look at Animal Stewardship," in *Ethics on the Ark*, ed. Norton, *et al.*, p. 105.

[27] J. Baird Callicott, "Animal Liberation and Environmental Ethics: Back Together Again," in *The Animal Rights/ Environmental Ethics Debate: The Environmental Perspective*, ed. Eugene C. Hargrove (Albany: State University of New York Press, 1992), pp. 249-61.

concerned about the welfare of the former as they are about the latter, suggesting that the privileged place of domesticated animals within our 'evolved' understanding of community may not be as significant in stimulating concern as our own personal experience of community.

One example that illustrates many of these issues is provided by a program in the Netherlands whereby certain domesticated breeds of farm animal have been introduced into a wild setting and managed using a 'hands-off' approach. What has attracted the concern of animal rights groups, not to mention members of the general public, is the mortality experienced by these populations during harsh winters.[28] A government report into the effects of the 2004/05 winter indicate that 22 percent of the red deer, 14 percent of the horses, and 34 percent of the cattle did not survive.[29] The root of the community concern is that the Dutch herbivores, despite being wild (insofar as they form viable populations despite limited human intervention), are not yet perceived as wild:

> Since Henk cattle still look like cows and Konik horses look like riding school horses, people think that they should be treated like these domesticated animals. With unbrushed and matted coats they seem to be neglected. The rangers themselves prefer to differentiate

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[28] Irene Klaver, Jozef Keulartz, Henk van den Belt and Bart Gremmen, "Born to be Wild: A Pluralistic Ethics Concerning Introduced Large Herbivores in the Netherlands," *Environmental Ethics* 24 (2002): 5-7.

[29] C.J.G. Wensing and H.J.L. Vonhoff, "2004-2005 Winter Mortality in Large Herbivores
in the Oostvaardersplassen," Advisory report RLG 05/8a by the Council on Animal Affairs and the Council for Rural Areas, June 2005.

as little as possible between the originally domesticated animals... and the wild animals in their areas, the red deer and the roe.[30]

On this basis it could be expected that as the animals survive more winters and produce offspring better adapted to such conditions, and as people get used to the idea that these are wild rather than domesticated animals, there might be less community concern about natural threats to their welfare. However, because large species like horse and cow are more likely to arouse the motive of *Connection*, and because there is likely to be a high level of public awareness of what takes place in the Dutch reserves, concern for suffering experienced by these species may well persist indefinitely.

VI. CONCLUSION

With the inherent value of biodiversity primarily inspired by the motive of *Scientific Concern*, and with further consideration of *Larger Context* unwarranted because of its non-specific quality, it is apparent that biodiversity-focused conservation has the potential to clash with values of nature that reflect the dominance of *Connection* or *Autonomy*. This potential for conflict is reflected in actual debates surrounding animal welfare and the naturalness of ecological restoration. However, despite this potential, there are also crucial areas of convergence.

Debate between animal welfare activists and proponents of biodiversity conservation is generated by the willingness of the latter to condone the suffering or death of sentient animals for the benefit of native species and

[30] Klaver, *et al.*, "Born to be Wild," p. 7.

ecosystems. However, despite the high potential for conflict on issues relating to the rights of individuals versus species and ecosystems, some convergence between the two positions is apparent on the moral considerability of wild animals in natural circumstances. The explanation presented here is that both positions share a common set of values, generated by the motives comprising the axiology of inherent value. *Connection*, *Scientific Concern*, and *Autonomy* exert their influence on both conservationists and welfarists, although the former prioritise *Scientific Concern*, while the latter prioritise *Connection*. Conflict arises only when biodiversity is threatened by actions taken to prevent harm to individual animals, or when individual animals are harmed in order to conserve biodiversity. In relation to the welfare of wild animals in natural circumstances, the influence of *Autonomy*, combined with the lack of exposure of most people to animal suffering in the wild, gives rise to convergence between the two positions on this issue.

Chapter Eleven

MOTIVE CONFLICT AND CONVERGENCE: ECOLOGICAL RESTORATION

We wish to protect and preserve wild nature, but it appears that to do so we must accommodate a rather hard-nosed scientific positivism which in the biological sciences takes the form of an equally hard-nosed management style. The result... is that we can save natural diversity only by destroying nature's own wild order. The alternative, 'letting nature sort things out,' is not seriously considered. Indeed it has become anathema, for even our pathetic attempts at control would be better than letting natural order rule the natural world.

Jack Turner (1996)[1]

I cannot state a preference in this wide sweep of opinions, from pure hands-off romanticism to thorough overmanagement (though I trust that most of us would condemn both extremes). Absolute answers to such ethical and aesthetic questions do not exist in any case. But we will not achieve clarity on this issue if we advocate a knee-jerk equation of 'native' with morally best, and fail to recognize the ethical power of a contrary view, supporting a sensitive cultivation of all plants, whatever their geographic origin, that can enhance nature and bring both delight and utility to humans.

Stephen Jay Gould (1998)[2]

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[1] Jack Turner, *The Abstract Wild*, (Tucson: The University of Arizona Press, 1996), p. 117.

[2] Stephen Jay Gould, "An Evolutionary Perspective on Strengths, Fallacies, and Confusions in the Concept of Native Plants," *Arnoldia* 58 (1998): 19.

I. INTRODUCTION

This chapter continues the investigation of conflicts between the values of biodiversity and the values of nature, with the focus shifting from the welfare of wild animals to the debate surrounding the naturalness of ecological restoration. In the previous chapter it was suggested that this debate reflects a clash of values between those associated with *Scientific Concern* and *Autonomy*. As in the previous chapter, the potential for conflict and convergence between the opposing positions will be examined, but first, the respective positions must be delineated.

II. THE NATURALNESS VERSUS WILDNESS DEBATE

There has been considerable debate in the conservation literature as to whether wilderness areas ought to be managed to enhance naturalness or wildness.[3] In this context, 'wildness' is generally taken to refer to the

[3] See, for example, Peter B. Landres, Mark W. Brunson, Linda Merigliano, Charisse Sydoriak and Steve Morton, "Naturalness and Wildness: The Dilemma and Irony of Managing Wilderness," in *Wilderness Science in a Time of Change Conference – Volume 5: Wilderness Ecosystems, Threats, and Management*, comps. David N. Cole, Stephen F. McCool, William T. Borrie and Jennifer O'Loughlin (Ogden: Rocky Mountain Research Station, 2000), pp. 377-81; Michael E. Soulé, "Should Wilderness Be Managed?" in *Return of the Wild: The Future of Our National Lands*, ed. Ted Kerasote (Washington, DC: Island Press, 2001), pp. 136-52; David M. Graber, "Ecological Restoration in Wilderness: Natural Versus Wild in National Park Service Wilderness," *The George Wright Forum* 20 (2003): 34-41; Mark Woods, "Ecological Restoration and the Renewal of Wildness and Freedom," in *Recognizing the Autonomy of Nature: Theory and*

quality of being 'untramelled'. As noted in chapter nine, this term is found in the United States Wilderness Act of 1964, and refers to the absence of deliberate human control. 'Naturalness' is taken to refer to species and ecosystems that are consistent with defined historical benchmarks. The 'dilemma' of wilderness management is that when the Wilderness Act was drafted there was an expectation that wildness was conducive to naturalness, whereas it is now understood that without active manipulation natural areas are unlikely to conform with benchmarks of naturalness.[4]

An impediment to achieving clarity in this debate is the terms in which it is framed. In chapter six, the existence of two conflicting interpretations of naturalness was discussed. One of these relates to consistency with historical benchmarks, while the other describes processes that reflect an absence of rationally-planned intervention. It was suggested that the persistent use of the former was potentially inconsistent with the latter. Such inconsistencies are most apparent when it is claimed by conservation biologists that human intervention can enhance naturalness. Framing the debate in terms of 'naturalness' and 'wildness' is also problematic because of the ease with which they can be confused. Where 'naturalness' describes the absence of rationally-planned human intervention, 'wildness' describes behaviour that is not rationally-planned. The latter is a subset of the former. Considerable ambiguity occurs when these terms are used to describe the condition of species, ecosystems and landscapes, rather than processes and

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Practice, ed. Thomas Heyd (New York: Columbia University Press, 2005), pp. 170-88.

[4] David N. Cole, "Paradox of the Primeval: Ecological Restoration in Wilderness," *Ecological Restoration* 18 (2000): 77-86. Landres, *et al.*, "Naturalness and Wildness," pp. 377-81.

behaviour. This shift in context generates inconsistencies as it separates the terms from their core meanings.

The naturalness versus wildness debate is closely related to the debate between restorationists and preservationists that features prominently within the environmental ethics literature. These terms are also misleading, given that those who support ecological restoration do not necessarily oppose wilderness preservation, and vice-versa. The debate is better described as being between those who are inclined to believe that human intervention is necessary to protect the values associated with nature, and those who view the values of nature as demanding a minimum of human intervention. Interventionists are those for whom priority is accorded to the conservation of biodiversity, and who are primarily motivated by *Scientific Concern*, while noninterventionists are those who seek to promote the values of naturalness and wildness, and are primarily motivated by *Autonomy*.

III. THE INTERVENTIONISTS

The promotion of interventionist policies in order to conserve biodiversity is most strongly associated with the scientific sub-disciplines of conservation biology and restoration ecology. In consequence, the interventionist position is now strongly entrenched within bureaucratic structures charged with managing natural areas. However, this is not to say that other perspectives have no role to play in the management of natural areas; criteria such as wild character, animal welfare, visitor satisfaction, scientific value, and economic return also play an important role. However,

in situations where intervention is necessary to meet biodiversity conservation targets, it is generally the interventionist position that will prevail, not least because of the international impetus for national governments to enshrine this course of action within legislation.

With conservation biology and the increasing dominance of biodiversity described in earlier chapters, we only need briefly examine restoration ecology before proceeding to consideration of the noninterventionist position. Restoration ecology involves the manipulation of the natural environment in order to establish conditions beneficial for native biodiversity. Although restoration, at least in the United States, had long been a feature of nature conservation legislation, it was not until 1981 that the first scientific journal dedicated to this practice was established. This was *Restoration and Management Notes*, published by the University of Wisconsin Arboretum, the founding editor of which was William Jordan. In 1989, the Society for Ecological Restoration (SER) was formed and initiated a new journal, *Restoration Ecology*, in 1993. *Restoration and Management Notes* became *Ecological Restoration* in 1999 and, although still owned by the University, is run by members of the SER.[5] Another relevant journal is *Ecological Management and Restoration*, which was established in 2000 by the Ecological Society of Australia. Articles relating to the ethics and practice of restoration are also regularly found in the various journals relating to conservation biology and environmental ethics.

According to the SER, "ecological restoration is the process of assisting the recovery of an ecosystem that has been degraded, damaged, or

[5] See the websites of the SER (http://ser.org/about.asp; http://www.ecologicalrestoration.info).

destroyed." This involves "attempts to return an ecosystem to its historic trajectory", with the principal objective being recovery. The primary criterion for determining whether this has been achieved is the presence of "a characteristic assemblage of species".[6] There is an important distinction between restoration and rehabilitation, with the latter involving "the reparation of ecosystem processes, productivity and services" while the former includes "the re-establishment of the pre-existing biotic integrity in terms of species composition and community structure."[7] From the perspective of the conflict surrounding ecological restoration it is significant that the opening statement by the SER in their restoration primer is: "ecological restoration is an intentional activity".[8]

Aside from those people who specifically consider themselves to be aligned with conservation biology or restoration ecology, the interventionist camp also includes the large number of people who consider themselves to be environmentalists or otherwise concerned for the fate of nature, who consequently believe that the conservation of biodiversity and the prevention of species extinction is a moral imperative, yet are relatively unaware of the possible conflict between this position and the preservation of wildness.

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[6] SER, *The SER International Primer on Ecological Restoration*, (Tucson: Society for Ecological Restoration International, 2004), pp. 1-3.

[7] *Ibid.*, p. 12.

[8] *Ibid.*, p. 1.

IV. THE NONINTERVENTIONISTS

In contrast to the interventionists, who are well-represented by organised groups, the preservationists, or noninterventionists, tend to consist of individuals expressing their dissatisfaction with the dominant position.[9] Associated with the noninterventionist position are a number of environmental philosophers, most prominently Robert Elliot,[10] Eric Katz[11] and Holmes Rolston, [12] although others, such as Neil Evernden and Thomas Birch, have also written about the paradox of managing 'wildness'.[13] More recently, the principal spokesmen have been wilderness advocates like Jack Turner,[14] David Cole,[15] and Peter Taylor.[16] One also

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[9] As discussed in chapter one, the terms 'conservationist' and 'preservationist' have shifted in meaning since first used in the context of the protection of nature. It should also be noted that use of the term 'preservationist' to describe those who advocate a 'hands-off' approach to managing natural areas is not consistent with the literal definition of the term, which could be taken to mean protecting something from all change, natural or anthropogenic.

[10] See, for example, Robert Elliot, "Faking Nature," *Inquiry* 25 (1982): 81-93; Robert Elliot, *Faking Nature: The Ethics of Environmental Restoration*, (London: Routledge, 1997).

[11] See, for example, Eric Katz, "The Big Lie: The Human Restoration of Nature," *Research in Philosophy and Technology* 12 (1992): 231-41; Eric Katz, *Nature as Subject: Human Obligation and the Natural Community*, (Lanham: Rowman & Littlefield, 1997).

[12] See, for example, Holmes Rolston, "The Wilderness Idea Reaffirmed, " *Environmental Professional* 13 (1991): 370-77.

[13] See, for example, Neil Evernden, *The Natural Alien*, (Toronto: University of Toronto Press, 1985); Neil Evernden, *The Social Creation of Nature*, (Baltimore: Johns Hopkins University Press, 1992); Thomas Birch, "The Incarceration of Wildness: Wilderness Areas as Prisons," *Environmental Ethics* 12 (1990): 3-26.

[14] See, for example, Turner, *The Abstract Wild*, (Tucson: The University of Arizona Press, 1996); Jack Turner, "The Wild and its New Enemies," in *Return of*

detects noninterventionist sympathies in many authors who have considered the significance of non-equilibrium ecology for conservation. By emphasising the inherent instability of ecosystems, whether disturbed by humans or not, non-equilibrium ecology casts doubt over various justifications for the active maintenance of particular species communities; a perspective compatible with the noninterventionist position.[17] Sympathy is also found among those, like Potter *et al.*, who point out the long-term environmental benefits of the abandonment of agricultural land.[18]

Although organisations expressly devoted to promoting nonintervention in nature are rare, it has been known for such groups to be formed in response to particular events. For example, in the case of the 1996 Chicago

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the Wild: The Future of Our National Lands, ed. Ted Kerasote (Washington, DC: Island Press, 2001), pp. 119-35.

[15] See, for example, David N. Cole, "Symbolic Values: The Overlooked Values That Make Wilderness Unique," *International Journal of Wilderness* 11 (2005): 10, 23-27.

[16] Peter Taylor, *Beyond Conservation: A Wildland Strategy*, (London: Earthscan, 2005)

[17] See, for example, Mark Sagoff, "Muddle or Muddle Through? Takings Jurisprudence Meets the Endangered Species Act," *William and Mary Law Review* 38 (1997): 825-993; Nigel S. Cooper "How Natural is a Nature Reserve?: An Ideological Study of British Nature Conservation Landscapes," *Biodiversity and Conservation* 9 (2000): 1140-43; Steven Trudgill, *The Terrestrial Biosphere: Environmental Change, Ecosystem Science, Attitudes and Values*, (Harlow: Pearson Education, 2001), pp. 117-135; William M. Adams, "When Nature Won't Stay Still: Conservation, Equilibrium and Control," in *Decolonizing Nature: Strategies for Conservation in a Post-Colonial Era*, eds. William M. Adams and Martin Mulligan (London: Earthscan Publications, 2003), pp. 220-46.

[18] Clive Potter, Paul Burnham, Angela Edwards, Ruth Gasson and Bryn Green, *The Diversion of Land: Conservation in a Period of Farming Contraction*, (London: Routledge, 1991), pp. 92-93.

Restoration Controversy, when attempts to transform forested areas into historic prairie ecosystems met with public opposition, a number of noninterventionist community groups were formed, such as the Alliance To Let Nature Take Its Course.[19]

Despite the apparent dominance of the interventionist perspective, it cannot be said that noninterventionist sentiment has been entirely overwhelmed within mainstream society by a focus on biodiversity conservation. A study of people involved in forest management in the United States, for example, identified that at least half of the 44 people surveyed believed that 'nature knew best' and that, if left to itself, a 'balance of nature' would be achieved.[20] It should be noted that conflicting opinions regarding ecological restoration were not examined by the survey, and consequently many of those who believed that 'nature knew best' might also support intervention in nature for conservation purposes. Nonetheless, it does indicate a high base level of sympathy, at least among those who participated, for the notion that nature ought to be left to its own devices.

However, this raises the important question of the extent to which disagreement over these issues has moved beyond the pages of academic journals and actually galvanised public opinion. The answer is that high

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[19] Paul H. Gobster, "Restoring Nature: Human Actions, Interactions, and Reactions," in *Restoring Nature: Perspectives from the Social Sciences and Humanities*, ed. Paul H. Gobster and R. Bruce Hull (Washington, DC: Island Press, 2000), p. 3.

[20] R. Bruce Hull, David P. Robinson, David Richert, Erin Seekamp and Gregory J. Buhyoff, "Assumptions About Ecological Scale and Nature Knowing Best Hiding in Environmental Decisions," *Conservation Ecology* 6 (2002): 1-15.

profile disputes are extremely rare. The dispute subjected to the most analysis is that which took place in Chicago, mentioned above, while Debra Shore briefly describes two other cases that have gained publicity in the United States.[21] Paul Gobster, a social scientist working with the United States Forest Service, who was also involved in the study of the Chicago dispute, indicates on his website that he is currently investigating a similar fracas in San Francisco.[22] In Australia, evidence is difficult to find of restoration projects that have generated community opposition. Several projects have been identified that resulted in irate letters to the local newspaper but little more.[23]

It is apparent that the marginal status of the noninterventionist position is a relatively recent phenomenon. A good example of this shift is provided by the case of the California condor. In the mid-1980s, the wild condor population had dropped to such low levels that its extinction was assured, yet plans by such organisations as the Fish and Wildlife Service to trap the remaining birds in order to establish a captive breeding program were opposed by a variety of environmentalists:

> Condors embodied wild nature and justified the protection of wilderness areas as critical endangered species habitat; in return, wilderness endowed the condor with its symbolic capital. Some took

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[21] Debra Shore, "Controversy Erupts Over Restoration in Chicago Area," *Restoration & Management Notes* 15 (1997): 28.

[22] See Paul Gobster's website (http://ncrs.fs.fed.us/people/Gobster).

[23] A controversial project proposed for a foreshore suburb of Sydney in 2004 is not relevant to this discussion as it involved the restoration of a suburban park, not a natural area. See Phil McManus, "Mangrove Battlelines: Culture/Nature and Ecological Restoration," *Australian Geographer* 37 (2006): 57-71.

> this argument even further, claiming that real condors only lived in the wilderness and that intensive scientific management by definition robbed them of their wild essence. Condors would be better off left alone under any circumstances, even if doing so led to their extinction.[24]

Opinions of this sort recall the notion of 'animal integrity', discussed in the previous chapter.

Peter Alagona notes that since 1992, when the first artificially reared condors began to be reintroduced into the wild, there has been a widespread conversion of those formerly opposed to the program. The vast majority of environmental activists are now in favour of the scientific management of wild nature to prevent extinctions.[25] In a similar vein, Turner observed in 1996 that:

> During the past five years conservation biology has extended its influence to radical environmentalism, inverting themes that once legitimized its radical content. The transformation of part of Earth First! into Wild Earth was a movement from personal trust and confrontation to trust in abstractions and conciliation with technology... Whereas science, technology, and modernity were once part of the problem, now they are a large part of the solution,

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[24] Peter S. Alagona, "Biography of a 'Feathered Pig': The California Condor Conservation Controversy," *Journal of the History of Biology* 37 (2004): 568.

[25] *Ibid.*, p. 580.

> and I fear that the Wildlands Project may reduce Wild Earth... to the political arm of a scientific discipline.[26]

Another advocate of nonintervention notes the tendency of wilderness campaigners to resort to biodiversity-oriented arguments when their real concern is the need to preserve wildness. Their use of such arguments reflects the pragmatic recognition that, in the current climate, biodiversity values carry greater legal weight.[27]

As Turner suggests, the increasing conjunction of nature conservation and interventionist policies is associated with the rise in influence of conservation biology and, as discussed in chapter two, the associated incorporation of the concept of biodiversity within environmental management systems. These trends are themselves partly generated by the growing realisation that human pressure is causing many species to become extinct, and that active human management is required to create and maintain the environmental conditions upon which they depend. Earlier policies of nonintervention, employed in places like Wicken Fen in the United Kingdom and many of the national parks in the United States, have generally been superseded when it became apparent that 'hands-off' policies led to ecosystem changes detrimental to some valued species.[28]

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[26] Turner, *The Abstract Wild*, pp. 118-19.

[27] James M. Glover, "Soul of the Wilderness: Can We Stop Trying to Control Nature?" *International Journal of Wilderness* 6 (2000): 5.

[28] Trudgill, *The Terrestrial Biosphere*, pp. 116-21; MaryBeth Keifer, Nathan L. Stephenson and Jeff Manley, "Prescribed Fire as the Minimum Tool for Wilderness Forest and Fire Regime Restoration: A Case Study from the Sierra Nevada, California," in *Wilderness Science in a Time of Change Conference – Volume 5: Wilderness Ecosystems, Threats, and Management*, comps. David N.

Such factors provide convincing reasons for why the noninterventionist position is currently out of favour with environmentalists.

V. DISTINGUISHING THE OPPOSING POSITIONS

The potential for convergence between the opposing positions relates to the difficulty involved in firmly delineating one from the other. Extreme positions are rarely espoused; interventionists do not, generally, feel comfortable with all forms of intervention, while most noninterventionists are willing to support intervention in certain circumstances. William Jordan, for example, one of the central figures in the ecological restoration movement, notes that an important goal of restorationists is to minimise the extent of human manipulation.[29] Similarly, Rolston defends restoration against claims by other noninterventionists, noting that "restorations do not fake so much as facilitate nature, help it along, mostly by undoing the damage that humans have introduced, and then letting nature do for itself."[30]

It is apparent that, while noninterventionists might reject ecological restoration, they will generally support rehabilitation. The most basic form of human impact on nature consists of actions that diminish the capacity of the environment to support self-sustaining life. At their most extreme, human actions render it virtually impossible for life to flourish, and include

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Cole, Stephen F. McCool, William T. Borrie and Jennifer O'Loughlin (Ogden: Rocky Mountain Research Station, 2000), pp. 266-69.

[29] William R. Jordan, "Autonomy, Restoration, and the Law of Nature," in *Recognizing the Autonomy of Nature*, ed. Heyd, p. 203.

[30] Holmes Rolston, *Conserving Natural Value*, (New York: Columbia University Press, 1994), p. 92.

the toxic pollution of land and water, the construction of impervious barriers (like houses or dams) over the land or in water, the removal of soil, and intensive agricultural activities. In order to enable such areas to once again support self-sustaining life to an extent that might eventually be considered 'natural', rehabilitation, rather than restoration, is sufficient. The focus of rehabilitation is on "the reparation of ecosystem processes, productivity and services, whereas the goals of restoration also include the re-establishment of the pre-existing biotic integrity in terms of species composition and community structure."[31] Rehabilitation seems largely consistent with the noninterventionist position, as it enables nonhuman life to flourish in a place where human actions had rendered it difficult. Andrew Light presents the beneficial outcomes of such activities in opposition to the claim by Katz that ecological restoration is just another manifestation of the human domination of nature.[32] Light's argument that such activities do not constitute human domination of nature is persuasive, although it is weakened by his failure to appreciate that such outcomes can largely be achieved through rehabilitation, without requiring the additional work associated with ecological restoration.

Similar distinctions complicate the interpretation of a study into the 'restoration discourses' held by 26 people involved in river and catchment restoration in the United States. John Woolley and Michael McGinnis identified four significant discourses, including one that was critical of many of the values associated with restoration, and preferred preservation

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[31] SER, *The SER International Primer*, p. 12.

[32] Andrew Light, "Restoration, Autonomy, and Domination," in *Recognizing the Autonomy of Nature*, ed. Heyd, pp.158-59.

as a strategy.[33] A possible explanation for this apparent contradiction is that a common motivation for engaging in restoration activities is an altruistic/ ecocentric desire to reverse the damage caused to nature by humans.[34] For many involved in ecological restoration, this might well be associated with the view that human intervention in nature is only justified in situations where human damage is apparent, which is itself consistent with a preference for nonintervention, and the view that "the ideal of restoration is to make itself, in the long run, unnecessary."[35] However, because many ecological changes can be linked in some way to human activities, most restoration projects would, on this criterion, be deemed acceptable by those restorationists who actually prefer preservation.

Distinguishing between the two positions is determined by the relative importance placed on global biodiversity. For the non-interventionist, intervention is only justified when the flourishing of life is seriously impeded by past human activity. The same applies to the interventionist, except that the flourishing of life is viewed as equivalent to the maintenance of global biodiversity, which is threatened by decline in populations of species that were well-established in an area prior to the advent of industrial society. The resistance of the non-interventionist to the need to consider global biodiversity is explained by the dominant motive of

[33] John T. Woolley and Michael Vincent McGinnis, "The Conflicting Discourses of Restoration," *Society & Natural Resources* 13 (2000): 339-57.

[34] See, for example, Robert L. Ryan and Robert E. Grese, "Urban Volunteers and the Environment: Forest and Prairie Restoration," in *Urban Place: Reconnecting With the Natural World*, ed. Peggy F. Barlett (Cambridge: The MIT Press, 2005), pp. 176-77.

[35] Bill Willers, "Introduction," in *Unmanaged Landscapes: Voices for Untamed Nature*, ed. Bill Willers (Washington, DC: Island Press, 1999), p. 2.

Autonomy. The high degree of abstraction involved in assessing biodiversity and orienting management to the conservation of biodiversity is inconsistent with the dissatisfaction experienced by the non-interventionist toward the abstractions of modern society. This perspective is captured best by Turner:

> The Otherness of the natural world is consumed by current social policy, and the new doctors of nature go about their mission – evangelists laboring once more amongst wild populations (now plants and animals instead of peoples) bringing the gift of modern order and our current version of salvation – the preservation of biodiversity. This salvation implies trust in abstract systems, and since the lay person has neither the knowledge or ability to evaluate the foundations of these abstract systems, our trust is less a matter of knowledge than of faith... Trust in abstract systems and experts disembeds our relations to nature from their proper context. This is precisely why so many of us will no longer place our trust in science: it ignores individual places, people, flora, and fauna.[36]

In a later passage he again rails against the abstractions of conservation management, calling for natural areas with:

> no conservation strategies, no designer wilderness, no roads, no trails, no satellite surveillance, no over-flights with helicopters, no radio collars, no measuring devices, no photographs, no GPS data,

[36] Turner, *The Abstract Wild*, p. 118.

> no databases stuffed with the location of every draba of the summit of Mt. Moran, no guidebooks, no topographical maps.[37]

Turner's complaints echo the concerns of Neil Evernden, who warns that "in learning to use numbers to talk about the world, [the environmentalist] forgets that his initial revolt was partly precipitated by people using numbers to talk about the world."[38]

However, for the noninterventionist, despite their resistance to such abstractions, it seems that the flourishing of nature must, to some extent, incorporate species richness. Light describes "the South African ice plant, an exotic in southern California that destroys the soil it is introduced to, is highly opportunistic and can easily spread onto degraded land, thus ensuring that native plants will not be able to reestablish themselves."[39] Such a plant, although wild and flourishing, is not necessarily compatible with the flourishing of nature, especially if the available space in which nature can thrive has been severely curtailed by human development. The noninterventionist might hope that some natural pathogen takes hold to curtail the dominance of the ice plant and enable a greater diversity of species to establish. There is a fine line between this hope and the weed eradication programs of restorationists. However, a desire for some minimum level of species richness is quite distinct from the establishment of systems to conserve global biodiversity. Species richness, for example, does not necessarily exclude non-native species. As Mark Sagoff

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[37] *Ibid.*, p. 120. 'Draba' refers to *Draba ventosa*, which is a rare species of small flowering plants.

[38] Evernden, *The Natural Alien*, p. 20.

[39] Light, "Restoration, Autonomy, and Domination," p. 159.

emphasises, there are many examples of introduced species that actually serve to increase local species richness.[40]

Deciding what course of action to take on an issue that might involve 'benevolent' intervention in nature will incorporate the influence of all four motives comprising the axiology. Although *Autonomy* will dominate the inclinations of the noninterventionist, the influence of *Scientific Concern* might tip the balance in favour of the sort of restoration program as the one that resulted in the eradication of black rats from Anacapa Island, mentioned in the previous chapter. Similarly, someone who would normally be associated with interventionist approaches might, through the influence of *Autonomy*, baulk at the prospect of employing genetically engineered pathogens to eradicate an introduced species.[41] Also influencing our decisions are the instrumental reasons we might have for preferring one species over another, and the persistent cultural prejudice of many people against invasive species, giving rise to the militaristic and nationalist metaphors used to describe actions taken to control them.[42]

With the distinction between the interventionist and noninterventionist positions essentially limited to the degree to which the flourishing of nature is perceived as equivalent to the conservation of global biodiversity, there

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[40] Mark Sagoff, "Do Non-Native Species Threaten the Natural Environment?" *Journal of Agricultural and Environmental Ethics* 18 (2005): 224-27.

[41] See Turner, "The Wild and its New Enemies," p. 122.

[42] See, for example, Matthew K. Chew and Manfred D. Laubichler, "Natural Enemies – Metaphor or Misconception?" *Science* 301 (2003): 52-53; Brendon M.H. Larson, "The War of the Roses: Demilitarizing Invasion Biology," *Frontiers in Ecology and the Environment* 3 (2005): 495-500; William O'Brien, "Exotic Invasions, Nativism, and Ecological Restoration: On the Persistence of a Contentious Debate," *Ethics, Place and Environment* 9 (2006): 63-77.

is considerable potential for convergence between the two, as discussed in the following sections. This is followed by an overview of 'rewilding', which appears to be a phenomenon that satisfies both value orientations.

VI. HUMAN-NATURE DICHOTOMY

Ned Hettinger describes "preservationist environmental thought" as involving "the following interrelated ideas":

> Nature's value is significantly a function of its degree of independence from humanity. Naturalness or wildness is what most centrally grounds nature's value. When considerably modified by humans, nature loses much of its value and even its essential character. A strong conceptual separation exists between humans and nature. Nature is to be understood in opposition to humanity; nature is the nonhuman. Wilderness is thus quintessential nature. Respect for nature most importantly involves the preservation of wilderness areas, free from significant human influence.[43]

This 'strong conceptual separation' has long been a subject of interest for environmental philosophers, and is seen by many as the underlying cause of the environmental crisis. It is claimed that if people viewed themselves and their world as more a part of, rather than apart from, the natural world, then the well-being of the latter would be understood as integral to the well-being of the former, and the 'crisis' would never have eventuated. To

[43] Ned Hettinger, "Respecting Nature's Autonomy in Relationship with Humanity," in *Recognizing the Autonomy of Nature: Theory and Practice*, ed. Thomas Heyd (New York: Columbia University Press, 2005), p. 86.

this end, a holistic perspective is strenuously advocated by those associated with deep ecology, who seek greater moral consideration of the natural world on the basis of expanding the human sphere of identification to encompass nature.[44] This is similarly the case for supporters of Aldo Leopold's 'land ethic', which also has as its moral foundation greater recognition of the human place within a wider non-human community.[45] Many restorationists claim that their activities are guided by such goals, and on this basis the noninterventionist position is dismissed as one that perpetuates an unhealthy relationship with nature.[46]

Although the separation of humans and nature is widely perceived to be the conceptual basis of the noninterventionist position, there are various grounds for doubting its significance. A variety of authors have questioned the validity and usefulness of grounding moral arguments in the existence of such a dichotomy. Neil Evernden, for example, suggests that calls for integration, as for the recognition of difference, reinforce the separation of nature and humanity, because they both imply that nature is distinct from

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[44] Bill Devall and George Sessions, *Deep Ecology: Living as if Nature Mattered*, (Layton: Gibbs Smith, 1985), pp. 65-67; David Rothenberg, *Hand's End: Technology and the Limits of Nature*, (London: University of California Press, 1993).

[45] See J. Baird Callicott, "Intrinsic Value, Quantum Theory, and Environmental Ethics," *Environmental Ethics* 7 (1985): 257-75.

[46] See, for example, Michael Vincent McGinnis, "Deep Ecology and the Foundations of Restoration," *Inquiry* 39 (1996): 203-17; William R. Jordan, "'Sunflower Forest': Ecological Restoration as the Basis for a New Environmental Paradigm," in *Beyond Preservation: Restoring and Inventing Landscapes*, ed. A. Dwight Baldwin, Judith de Luce and Carl Pletsch (Minneapolis: University of Minnesota Press, 1994), p. 21; Tony Povilitis, "Toward a Robust Natural Imperative for Conservation," *Conservation Biology* 15 (2001): 533-35.

humanity. He suggests that all people need to acknowledge the otherness of nature, which requires us to remain open to experience and resist categorising wild things as either 'us' or 'them'.[47] Criticism by Bernard Williams is similarly grounded:

> It is one the stranger paradoxes of many people's attitudes to this subject... that while they supposedly reject traditional pictures of human beings as discontinuous from nature in virtue of reason, and they remind us all the time that other species share the same world with us on (so to speak) equal terms, they unhesitatingly carry over into their picture of human beings a moral transcendence over nature, which makes us uniquely able, and therefore uniquely obliged, to detach ourselves from any natural determination of our behaviour."[48]

Peter Fritzell identifies this tendency in the writings of Aldo Leopold, noting that frequent assertions of human equivalence to nature are routinely contradicted by other observations demonstrating that humans stand outside the natural order.[49]

Val Plumwood argues that although disconnecting the self from the other ignores the degree to which our self-understanding is dependent on the other:

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[47] Evernden, *The Social Creation of Nature*, pp. 96-131.

[48] Bernard Williams, *Making Sense of Humanity and Other Philosophical Papers 1982-1993*, (Cambridge: Cambridge University Press, 1995), p. 237.

[49] Peter A. Fritzell, "The Conflicts of Ecological Conscience," in *Companion to A Sand County Almanac: Interpretative & Critical Essays*, ed. J. Baird Callicott (Madison: University of Wisconsin Press, 1987), pp. 141-44.

> we also need to stress the difference and divergent agency of the other in order to defeat... the colonizing dynamic that seeks to assimilate and instrumentalize the other, recognizing and valuing them only as a part of self, alike to self, or as means to self's ends.[50]

Piers Stephens seeks recognition of the validity of both positions because "in order to defend nature *as* natural, it must be distinguishable for argumentative purposes, but the green insistence on the place of humanity in nature must also be respected."[51] David Cooper observes that "human beings stand in countless relationships to The Environment and its constituents, and it is senseless to ask of these *en bloc* whether they should be relationships of unity within a whole or contrast with what is 'other'."[52] Kay Milton pragmatically suggests that "conservationists cannot abandon the nature-culture dichotomy because it is too important to them: it is a part of what they are striving to conserve".[53] Similarly, in his response to deep ecology, Peter Reed argues that "it is our very *separateness* from the Earth,

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[50] Val Plumwood, "Deep Ecology, Deep Pockets, and Deep Problems," in *Beneath the Surface: Critical Essays in the Philosophy of Deep Ecology*, ed. Eric Katz, Andrew Light and David Rothenberg (Cambridge: MIT Press, 2000), p. 64.

[51] Piers H.G. Stephens, "Nature, Purity, Ontology," *Environmental Values* 9 (2000): 270.

[52] David E. Cooper, "The Idea of Environment", in *The Environment in Question: Ethics and Global Issues*, ed. David E. Cooper and Joy A. Palmer (London: Routledge, 1992), p. 177.

[53] Kay Milton, "Nature is Already Sacred", *Environmental Values* 8 (1999): 443.

the gulf between the human and the natural, that makes us want to do right by the Earth."[54]

The dominant message gleaned from such authors is that people will view nature as connected or separate from humanity depending on the context. That the interventionist position has become associated with the notion of humans and nature being connected can be explained by its apparent compatibility with a willingness to intervene in natural processes. Similarly, nonintervention and nature-human separateness seem connected because this position advocates respect for nature's autonomy. However, despite these seemingly straightforward associations, it is wrong to suggest that a particular perspective on the dichotomy is fundamental to either position. The primary significance of the dichotomy for environmentalists is that uncaring attitudes toward the loss of nature have traditionally been associated with a refusal to acknowledge the extent of human dependence on nature. The human-nature dichotomy is thus a useful way to distinguish environmentalists from those who view nature only as a resource. Restorationists therefore gain valuable moral high ground by claiming that preservationists share with anti-environmentalists an unwillingness to acknowledge ecological relationships. This claim is not baseless, insofar as the motive of *Autonomy*, and the noninterventionist position, is primarily associated with the value of naturalness. Hence the desire to collect and use ecological knowledge for human benefit can be viewed as being of secondary importance to promotion of naturalness. But, despite this value preference, noninterventionists recognise the significance to human well-

[54] Peter Reed, "Man Apart: An Alternative to the Self-Realization Approach," *Environmental Ethics* 11 (1989): 56.

being of minimising our impact on nature, even though this is not their primary reason for protecting nature. Even Katz, who is generally seen to personify the anti-restoration cause, strenuously promotes the necessity of incorporating ecological insights within environmental philosophy.[55]

The inconsistencies generated by insisting that the dichotomy represents a crucial distinction between different conservationist positions are revealed in the attempt by Callicott, Crowder and Mumford to describe 'two new schools of conservation thought', termed 'compositionalism' and 'functionalism'. They suggest that compositionalists "tend to think that people are a case apart from nature", while functionalists "tend to think that people are a part of nature and that *Homo sapiens* is no less natural than any other species." This implies that interventionists are functionalists and noninterventionists are compositionalists. Yet this does not tally with the authors' contention that "biological diversity, biological integrity, and ecological restoration are more at home in the compositionalist glossary."[56] Not only does this inconsistency suggest that Callicott *et al.* did not consider the restoration-preservation debate when formulating their hypothesis, it also highlights the risks associated with translating the human-nature dichotomy into value distinctions discernible in the real world.

Similar inconsistencies are apparent in the 'archetypical normative views of nature' identified by Tybirk *et al.* They suggest that the belief that

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[55] Eric Katz, "Against the Inevitability of Anthropocentrism," in *Beneath the Surface: Critical Essays in the Philosophy of Deep Ecology*, ed. Eric Katz, Andrew Light and David Rothenberg (Cambridge: MIT Press, 2000), p. 30.

[56] J. Baird Callicott, Larry B. Crowder and Karen Mumford, "Current Normative Concepts in Conservation," *Conservation Biology* 13 (1999): 24.

humans and nature are connected gives rise to the 'Ecologist View of Nature', while the belief that they are separate gives rise to the 'Naturalist View'.[57] Consequently, the values associated with the Ecologist View are seen as compatible with organic farming, while those associated with the Naturalist View are limited to the appreciation of undisturbed natural areas. Although this distinction makes some sense in the context of assessing the 'nature quality' of organic farming, it is not tenable when applied to ecological restoration. The belief that humans and nature are connected suggests that the 'Ecologist View' is equivalent to the interventionist position, yet the authors state that "the distinction between introduced and native is not crucial from the Ecologist View,"[58] which does not correlate with the demand by interventionists that introduced species be exterminated.

VII. NONANTHROPOCENTRISM

An interesting facet of the debate between restorationists and preservationists that reveals the divergent influence of underlying motives are the claims from either side that their position is less anthropocentric. Stephen Budiansky, for example, suggests of the noninterventionist

[57] Knud Tybirk, Hugo F. Alrøe and Pia Frederiksen, "Nature Quality in Organic Farming: A Conceptual Analysis of Considerations and Criteria in a European Context," *Journal of Agricultural and Environmental Ethics* 17 (2004): 253-55. The authors also identify a 'Culturist View of Nature', although being associated with the utilitarian values of nature it is not relevant to this discussion.

[58] *Ibid.*, p. 254.

position that "a more anthropocentric view of nature is hard to imagine."[59] Michael Soulé claims to consider the "non-anthropocentric perspective" when he suggests that if "all species could vote... the result of the election would likely be an overwhelming plurality in favor" of conserving biodiversity through active intervention.[60]

In opposition, Turner directs this accusation back toward interventionists:

> What used to be the goal of conservation – the preservation of the natural world and its own order – has been [reinterpreted as] neglect... Disagree with conservation biology and you find yourself in the corner of *those who don't care about nature* because the debate has been framed in anthropocentric terms: what's the best medicine *we* can give to the poor old sick world?[61]

Jack Temple Kirby likens ecological restoration to the restoration of old tractors; a hobby restricted to a particular social group and undertaken largely for personal enjoyment:

> The results of both sorts of restoration are charming and instructive, but insubstantial and distracting. Restoration ecology is an expensive self-indulgence for the upper classes, a New Age substitute for

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[59] Stephen Budiansky, *Nature's Keepers: The New Science of Nature Management*, (New York: The Free Press, 1995), p. 9.

[60] Michael E. Soulé, "Should Wilderness Be Managed?" in *Return of the Wild: The Future of Our National Lands*, ed. Ted Kerasote (Washington, DC: Island Press, 2001), p. 143.

[61] Turner, *The Abstract Wild*, p. 116.

> psychiatry. It distracts intelligent and persuasive people from systematic initiatives [to reduce the human impact on nature].[62]

Similarly, Mark Davis and Lawrence Slobodkin note that "perhaps, 'ecological architecture' might be a more apt characterization of the work of ecological restoration, because the term acknowledges the central roles played by both values and science."[63] Robert Lackey makes the point that "the basic idea behind a management paradigm is anthropocentric; it is to maximize benefits by applying a mix of decisions within defined constraints."[64]

We might first approach this stand-off by dispensing with Soulé's claim. Given the Darwinian self-interest of all living organisms, a comparable human analogy to his notion of the voting biosphere might be to conduct a poll of all businesses, large and small, to determine whether they would support subsidies from the International Monetary Fund to all those at risk of bankruptcy. Universal approval for subsidies is unlikely, and the same applies to nature. Consider all those species not in imminent danger of extinction, particularly those that would actually benefit from a 'hands-off' management approach that eschews the maintenance of disturbance regimes, culling of exotic species, or reintroduction of carnivores. Exotic

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[62] Jack Temple Kirby, "Gardening With J. Crew: The Political Economy of Restoration Ecology," in *Beyond Preservation: Restoring and Inventing Landscapes*, ed. A. Dwight Baldwin, Judith de Luce and Carl Pletsch (Minneapolis: University of Minnesota Press, 1994), pp. 239-40.

[63] Mark A. Davis and Lawrence B. Slobodkin, "The Science and Values of Restoration Ecology," *Restoration Ecology* 12 (2004): 1.

[64] Robert T. Lackey, "Seven Pillars of Ecosystem Management," *Landscape and Urban Planning* 40 (1998): 23.

species, to take one example, would be dead against ecological restoration. The problem with Soulé's position is that he assumes the loss of species is itself bad for nonhuman organisms generally. This cannot be sustained. While he may be right to claim that the loss of species is a moral issue, it is not a moral issue for the nonhuman community. The question of morality arises because many people place a high value on preventing species extinction. As discussed in chapter four, the intrinsic value of biodiversity is difficult to justify. The strongest claim for intrinsic value is that it is held by species whose presence in an ecosystem is crucial for the well-being of many other species. To return to Soulé's poll of the biosphere, we could expect each species to vote for themselves first, but that the greatest number of votes to be cast for the preservation of keystone species. This could be taken to suggest that the least anthropocentric perspective was one that valued species according to the significance of their ecological function, rather than all species equally.

Both *Scientific Concern* and *Autonomy* are associated with a degree of other-oriented concern, which is described by the particular sense of connection with nature that both inspire. For *Scientific Concern* this connection is on the basis of shared ecological interdependence, whereas for *Autonomy* it is on the basis of a shared autonomy from society. In the previous chapter it was reiterated that the motive of *Scientific Concern*, associated with an orientation towards the conservation of biodiversity, inspires concern for the survival of species and ecosystems rather than individual organisms. The role of *Autonomy* was also discussed, and found to be associated with a desire not to interfere in the lives of wild animals (dramatically reiterated above in relation to the California condor).

Although these motives are anthropogenic, they might not necessarily be anthropocentric. This possibility is considered below in relation to both *Autonomy* and *Scientific Concern*.

David Schmidtz observes that altruism can consist of both 'concern' and 'respect', with the former describing concern for the welfare of the other, and the latter describing the limitations we are willing to impose on our own behaviour in order to benefit the other.[65] According equal moral weight to the two seems reasonable when human interactions are considered, as freedom to pursue one's own interests is a near-universal human value. However, it is not clear that human-nonhuman relationships should be considered in the same way. Nonhuman life, as far as we know, has no conscious desire for autonomy, and instead merely desires the satisfaction of certain physical needs. If nonhuman life does not specifically desire autonomy it follows that, unlike respect for the autonomy of other people, respect for the autonomy of nature cannot be considered an altruistic act, unless it is also informed by consideration of welfare. This would imply that, in addition to being anthropogenic, the motive of *Autonomy* is also anthropocentric.

However, a different perspective is provided by Albert Musschenga in his discussion of 'animal integrity'. As noted in previous chapter, this notion entails human respect for the naturalness of an animal, which may be incompatible with its welfare. Musschenga suggests that commitment to the value of autonomy can be so entrenched within one's world view that it

[65] David Schmidtz, "Reasons for Altruism," in *Altruism*, ed. EF Paul, FD Miller & J Paul (Cambridge: Cambridge University Press, 1993), p. 53.

is perceived as being an intrinsic component of an animal's 'goodness'.[66] But it does not follow that the perception of goodness will result in human actions that are actually 'good' for the animal, which could potentially have a more fulfilling life in captivity than in the wild. An analogous situation is provided by Callicott's claim that the land ethic is ecocentric. The land ethic is grounded in a human genetic predisposition to maintain the well-being of the biotic community, which is the result of such an attitude having increased the survival prospects of our distant ancestors.[67] Yet, this process of evolutionary hard-wiring leaves open a similar potential for our perception of goodness to differ from what might actually be good for the biotic community, given that our perception is ultimately informed by what was in the best interests of our ancestors. Consequently, if the land ethic can be considered nonanthropocentric, it follows that the motive of *Autonomy* can give rise to values that are nonanthropocentric, though it is perhaps more accurate to describe both as non-instrumental and 'other-regarding', rather than fully nonanthropocentric.

With regard to *Scientific Concern*, the recent history of the California condor provides a good example of how concern for species can appear to be good for the individuals of that species, which would provide support for the nonanthropocentric claims of interventionists while diminishing the same claims by noninterventionists. Without intervention, the condors would now be extinct. As a result of intervention, condors exist in the wild,

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[66] Albert W. Musschenga, "Naturalness: Beyond Animal Welfare," *Journal of Agricultural and Environmental Ethics* 15 (2002): 180-85.

[67] J. Baird Callicott, "The Search for an Environmental Ethic," in *Matters of Life and Death*, second edition, ed. Tom Regan (New York: Random House, 1986), pp. 403-409.

although they remain intensely dependent on humans for their continued survival, with many not adapting well to an entirely natural existence.[68] It could be argued that intervention to save the species is justified by the fact that these individual birds are now able to live a satisfying life in the wild, despite the necessity for ongoing management. Yet if we forget, for a moment, the added value these individuals have for people, resulting from their rarity and cultural symbolism, then it appears that they have only as much value as any other individual bird of prey, perhaps less given their incomplete reintegration into the natural ecosystem. To take a consequentialist stance, it would have been of more benefit for the flourishing of nonhuman life generally if the large sums of money spent to save the California condor had instead been used to protect natural areas under threat of development. In this instance, the decision to save the condor appears to have been, at its heart, an anthropocentric one. Only those actions motivated primarily by the overall flourishing of nonhuman life are truly nonanthropocentric, and, as concluded in chapter four, such actions are not necessarily consistent with the conservation of biodiversity.

It appears that while neither the interventionist nor the noninterventionist position can be considered nonanthropocentric in the same way that concern for animal welfare might be, both positions are other-regarding to some extent. Consequently, it is difficult to argue that one is *more* altruistic than the other.

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[68] Alagona, "Biography of a Feathered Pig," p. 577; A.J.S. Rayl, "Becoming a Full-Fledged Condor," *Smithsonian* 35 (2004): 92-97.

VIII. COMMUNITY INVOLVEMENT

Advocates of ecological restoration often emphasise the cultural and psychological benefits of involvement in restoration activities. These are described by William Jordan, who argues that such activities are stimulating and challenging, both physically and mentally; that they encourage community-building and the development of connections with our cultural past and less-developed societies; and that they promote love and respect for nature.[69] He looks forward to "the emergence of restoration as a major cultural event, comparable with other social rituals such as elections, sporting events, festivals and holidays...", and includes reference to "the burning of the prairies in many areas of the Upper Midwest" having "become a rite of spring".[70] Eric Higgs makes specific reference to the 'Bagpipes and Bonfire' festival in Illinois, where the bonfire is made up from the weeds removed from the Lake Forest Preserve.[71]

Related to the social benefits of restoration activities is the claim that ecological restoration has 'inherent democratic potential'. This claim is justified by Higgs as follows:

> the qualities of restoration practice promote community engagement, experimentation, local autonomy, regional variation, and a level of creativity... It is the combination of value to nature and value to

[69] Jordan, "Sunflower Forest," pp. 21-31.

[70] *Ibid.*, pp. 27, 31.

[71] Eric Higgs, *Nature By Design: People, Natural Process, and Ecological Restoration*, (Cambridge: The MIT Press, 2003), p. 249.

> community that gives it the capacity to enhance a participatory politics.[72]

Higgs and Andrew Light take this claim further in their suggestion that restoration projects should be judged on such grounds:

> A bad restoration, characterized by a lack of community participation in the act, produces a value that is marked by this loss of the egalitarian potential of restoration for the community; this loss in value is uniquely felt at the local level where the special character of a community's relationship to the land is intimately tied to the practice of ecological restoration. The inherent democratic potential of ecological restoration is thus, in a strong sense, a potential for *local* human-nature relationships.[73]

However, in proclaiming these benefits, Jordan, Higgs and Light apply an extremely narrow perspective to the term 'community'. For them it appears to consist of those people whose values and lifestyles are compatible with the devotion of time to restoration activities; that is, people who feel that it is restoration that provides the basis for their 'relationship to the land'. By allowing our understanding of 'community' to be restricted in this way, it follows that the 'democratic potential' inherent to restoration is just as much a feature of many other potentially-egalitarian activities; road building, darts, or philosophical discussion, for example.

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[72] Higgs, *Nature By Design*, p. 255.

[73] Andrew Light and Eric S. Higgs, "The Politics of Ecological Restoration," *Environmental Ethics* 18 (1996): 236.

Light and Higgs develop this notion of the inherent democratic potential of restoration in contrast to preservation. They argue that "no new value is produced in an act of preservation because it preserves only the values that exist antecedent to the act of preservation." Restorationists, on the other hand, are 'value makers', and it is this process of creation and participation that underpins the 'inherent democratic potential'.[74] This is incorrect, insofar as preservation both creates value and is associated with a great many activities that are infused with value. Areas at risk of development are 'preserved' not by doing nothing, but by enacting legislation that places constraints on the type of development that can occur, or by citizens joining forces to purchase land themselves. Preservation campaigns increase the general level of awareness and appreciation of the values under threat, while the process itself increases community interaction with the political system, all of which involve the creation of sociopolitical value. For some advocates of biodiversity conservation such activities are viewed as detrimental, with one article suggesting that the emphasis on "rededicating existing conservation areas as wilderness can be thought of as a 'threatening process', one that deploys scarce conservation dollars into areas that are not the most effective for biodiversity conservation."[75] Higgs is less partisan, admitting that his criticism of preservation "is obviously a contentious claim, and it is not intended to diminish the significance of habitat protection, park creation, and various kinds of preservation activities... but they do not build constituency in the way hands-on

[74] Light and Higgs, "The Politics of Ecological Restoration," p. 235.

[75] Harry Recher and Daniel Lunney, "The Problem With Wilderness," *Nature Australia* 27 (2003): 84.

involvement can."[76] Yet Higgs ignores the hands-on involvement associated with recreation in natural areas, encompassing activities from birdwatching to mountain biking, and wilderness hiking to fishing. Although such involvement reflects the preservation ethos, in that the participants do not often intentionally alter nature, they are still involved with nature, and each other.

However, it is certainly true that for those who want to take an active role in helping nature and 'saving the planet', nature recreation will not satisfy the desire for action. This desire can be satisfied by contributing to campaigns for wilderness preservation, yet such campaigns are relatively infrequent, and rarely take place near where one lives. In contrast, restoration projects are ongoing, can be organised on almost any area of undeveloped land held in public ownership, and mostly involve physical, outdoor activity. Storm Cunningham points out that relative to preservation:

> restoration gets funded with comparative ease, because its more politically saleable: people almost universally get excited at the prospect of restoring something. 'Merely' conserving it too frequently elicits yawns. This is especially true in the United States where we love action (and spending money) above all else.[77]

[76] Higgs, *Nature By Design*, p. 257.

[77] Storm Cunningham, *The Restoration Economy: The Greatest New Growth Frontier*, (San Francisco: Berrett-Koehler, 2002), p. 245.

In a similar vein, Marguerite Holloway observes that the attitude of restorationists is "just do it, do something."[78] It seems likely that when mention is made of the 'inherent democratic potential' of restoration, what is meant is its potential to attract hands-on public involvement, which is generated in part by the perception that nature, and biodiversity, is in imminent peril, which leads to a desire for action.

It is interesting to note that the objection of Light and Higgs to restorations carried out by private organisations indicates that the values that inspire them to champion the cause of ecological restoration are somehow intertwined with their belief in the value of egalitarianism and democracy, and their disapproval of consumerism and commodification.[79] Such perspectives reinforce the notion that *Autonomy* exerts a significant influence on the interventionist position, albeit one that is subservient to the dominant influence of *Scientific Concern.*

IX. REWILDING

'Rewilding' is the term given to the process of converting developed land into natural areas through ecological restoration. One of the most popular, and controversial, aspects of the process is the reintroduction of flora and fauna that were once native to an area, yet are unable to naturally recolonise the area, or could only do so over a very long period. According

[78] Marguerite Holloway, "Nurturing Nature," *Scientific American* 270 (1994): 84. See also Christian Gamborg and Peter Sandøe, "Beavers and Biodiversity: The Ethics of Ecological Restoration," in *Philosophy and Biodiversity*, ed. Markku Oksanen and Juhani Pietarinen (Cambridge: Cambridge University Press, 2004), p. 228.

[79] Light and Higgs, "The Politics of Ecological Restoration," pp. 241-47.

to the rhetoric associated with rewilding, it enables the conservation of both biodiversity and wildness, suggesting that it is capable of reconciling the divergent value priorities that have sparked debate between interventionists and noninterventionists; a possibility that will be examined here.

The first major proposal to employ the term 'rewilding' was the Wildlands Project, which envisaged the creation of interconnected wilderness areas in the United States large enough to support viable populations of wolves and grizzly bears; species that would be reintroduced if necessary. This project was initially suggested in 1993 by a group including Dave Foreman, the founder of Earth First!, and conservation biologists including Soulé and Reed Noss. The directors of the Wildlands Project have since founded the Rewilding Institute, and Foreman left the former to become head of the latter.[80]

In the United Kingdom there is growing interest in rewilding, with three issues of the journal of the British Association of Nature Conservationists (*ECOS*) dedicated to the creation of wild land,[81] two prominent books, published in 2003 (originally in 1996) and 2005, that consider this subject,[82] the formation of the Wildland Network in 2005,[83] and the

[80] See the websites of the Wildlands Project (http://www.twp.org) and the Rewilding Institute (http://www.rewilding.org).

[81] These are *ECOS* 25(1), 25(2) and 25(3/4), all published in 2004.

[82] William M. Adams, *Future Nature: A Vision for Conservation*, revised edition, (London: Earthscan Publications, 2003); Peter Taylor, *Beyond Conservation: A Wildland Strategy*, (London: Earthscan, 2005).

[83] See the website of the Wildland Network (http://www.wildland-network.org.uk). The more established Scottish Wild Land Group has also expressed some interest in rewilding. See their website (http://www.swlg.org.uk).

screening on television of a documentary series entitled *Wild Europe*. In Australia, the Wilderness Society in cooperation with some state governments has begun to implement its WildCountry plan,[84] whereas in Canada the dominant rewilding program is the Yellowstone to Yukon conservation initiative (Y2Y),[85] although there has also been interest expressed in a similar project in the Appalachian region.[86] In Europe, the Pan-European Ecological Network (PEEN) includes provision for the restoration of habitat in order to link existing reserves.[87]

The most ambitious national rewilding project to be undertaken so far is the Nature Policy Plan, unveiled by the government of the Netherlands in 1990. It envisages expansion of the protected natural area network in that country from 450,000 hectares to 750,000 hectares by 2020 through the abandonment of cultivated land and subsequent ecological restoration. The Plan includes the introduction of wild species, such as deer and boar, in order to recreate the species assemblage that was dominant prior to intensive human modifications, and thereby restore 'natural' ecological processes. However, the large herbivores that were once part of these ecosystems have long since become extinct. Because grazing by these species was so ecologically influential in restricting the natural succession

[84] See the website of the Wilderness Society (http://www.wilderness.org.au).

[85] See the website Yellowstone to Yukon Conservation Initiative (http://www.y2y.net).

[86] Emily M. Bateson, "Two Countries, One Forest – Deux Pays, Une Forêt: Launching a Landscape-Scale Conservation Collaborative in the Northern Appalachian Region of the United States and Canada," *The George Wright Forum* 22 (2005): 35-45.

[87] Council of Europe, *General Guidelines for the Development of the Pan-European Ecological Network* (Nature and Environment No. 107, 2000).

from grassland to forests, it was decided that surrogate species were required. Semi-domesticated breeds of horse, cattle, sheep and goats were chosen whose ancestry was similar to that of the extinct species.[88] These areas of 'new nature' have been quite successful, although they have given rise to a number of animal welfare issues, discussed in the previous chapter.

Rewilding has the appearance of being the perfect compromise between wilderness values and the conservation of biodiversity, between the noninterventionist and interventionist positions. The motive of *Autonomy* is satisfied by the return of developed land to nature and the emphasis on natural processes. The motive of *Scientific Concern* is satisfied by the increased survival prospects of species that require larger areas of natural habitat than is currently available. However, most rewilding projects appear to be primarily justified by the latter. In the US, for example, despite the apparent enthusiasm of proponents of the Wildlands Project for wildness – "wild nature is worth having because it enriches our lives and nourishes our souls"[89] – there remains a commitment to intensive management if required to ensure that biodiversity targets are met.[90] Similarly, although the principal objectives of the Pan-European Biological

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[88] Hein-Anton van der Heijden, "Ecological Restoration, Environmentalism and the Dutch Politics of 'New Nature'," *Environmental Values* 14 (2005): 431-35.

[89] John Terborgh and Michael E. Soulé, "Why We Need Megareserves: Large-Scale Reserve Networks and How to Design Them," in *Continental Conservation: Scientific Foundations of Regional Reserve Networks*, ed. Michael E. Soulé and John Terborgh (Washington, DC: Island Press, 1999), p. 208.

[90] Reed F. Noss, Eric Dinerstein, Barrie Gilbert, Michael Gilpin, Brian J. Miller, John Terborgh and Steve Trombulak, "Core Areas: Where Nature Begins," in *Continental Conservation*, ed. Soulé and Terborgh, pp. 117-22.

and Landscape Diversity Strategy include reference to protecting "the last wild rivers, wetlands and coasts, and the last remaining virgin forests of Europe", the overwhelming focus is on the maintenance and enhancement of biodiversity.[91]

The UK is something of an exception, with Taylor conveying the impression that rewilding there is associated with a higher degree of interest in the re-establishment of natural processes, and scepticism regarding the dominance of biodiversity-oriented approaches to conservation. His book, which is the principal source of information on this topic outside of the US, is particularly critical of the dedication of considerable funding to the conservation of endangered species whose existence is dependent on human disturbance.[92]

Rewilding has not gained the total support of noninterventionists. Because of the biodiversity focus and scientific approach, Turner remains unconvinced by the Wildlands Project:

> if successful, it would become the world's largest created environment. Its order and structure – the cores, corridors, buffers, and dense-population areas – would undoubtedly be visible from space. I think of it as North America designed by Foreman, Noss, and Associates.[93]

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[91] See the Strategy Guide website (http://www.strategyguide.org). Note that the Pan-European Ecological Network, mentioned above, forms one part of the Strategy.

[92] See, for example, Taylor, *Beyond Conservation*, pp. 88-89, 217, 222.

[93] Turner, *The Abstract Wild*, p. 110.

These concerns are echoed by James Fenton from the United Kingdom, who states that:

> At the heart of my concern lies the fact that these upland landscapes, although they have been used (in that humans have modified the natural factors of grazing and burning), they have never been *designed*... No-one has ever consciously sat down and said, "we want wet heath there, a flush here, grassland here, and a woodland over there," and such undesigned landscapes are becoming increasing [sic] rare in Europe, if not the world. By planting trees, even in an ecologically sound manner, we are, in effect, converting a wild landscape into a designed one.[94]

It will take a long time for such areas to 'feel' wild to those who retain a fresh memory of the design process. An alternative for those who share the concerns of Turner and Fenton would be to prohibit all replanting in the areas set aside, thereby allowing nature to recolonise the space naturally. However, another option that would also retain some consistency with the motive of *Autonomy* would be to randomly distribute seed across the landscape, allowing species to take root where they will, thereby diminishing the input of human intention.

The reintroduction of animal species might potentially be opposed by noninterventionists, given that there can be as much human intervention involved in species reintroduction as in species introduction. This position is articulated by Christian Gamborg and Peter Sandøe, who note that

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[94] James Fenton, "Scotland: Reviving the Wild," *ECOS* 20 (1999): 69.

certain groups in Denmark have resisted beaver reintroduction as equivalent to "meddling with nature".[95] However, there are aspects of species reintroduction that are consistent with *Autonomy*. The new species are more likely to contribute to the overall flourishing of life than an exotic species, and will be symbolic of a desire to reverse the ecological damage wrought by modern society. The reintroduction of large animals will accelerate the rewilding process, provided they do not require ongoing management, as they exert their own autonomous demands on the landscape to a greater extent than plants. As noted in chapter six, carnivores are particularly symbolic of wildness, as they pose a threat to human safety and commercial interests. The proposal by Tim Flannery to introduce Komodo dragons into Australia, also noted in chapter six, tests the limits of what noninterventionists might be willing to condone. Although exotic to Australia, the dragon is similar to species that once survived on the continent prior to the first appearance of humans. Despite occupying the same ecological niche as the now-extinct native species, its impact on the local biota, if introduced, could be significant. Perhaps most crucially, after its initial reintroduction the dragon would not symbolise wildness, but instead the political deliberation surrounding the decision to unleash the lizard. This is somewhat paradoxical given that such a step into the unknown, inspired by a love of the wild, perfectly embodies the motive of *Autonomy*.

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[95] See Christian Gamborg and Peter Sandøe, "Beavers and Biodiversity: The Ethics of Ecological Restoration," in *Philosophy and Biodiversity*, ed. Markku Oksanen and Juhani Pietarinen (Cambridge: Cambridge University Press, 2004), p. 226.

As noted earlier, rehabilitation activities, including the removal of non-living human artifacts, such as buildings, machinery, and contaminated soil, and the stabilisation of human-generated erosion, do not conflict with the noninterventionist position provided they do not require an ongoing human presence. However, *Autonomy* can also be served by leaving human artifacts in place, as their visible deterioration over time serves to emphasise the regenerative capacity of nature. Much of the attraction of ruins can be seen as derived from this source. However, *Autonomy* would be ill-served by an excess of deliberation on this point, which might even culminate in the intentional placement of artifacts in order to stimulate particular emotions, in a manner reminiscent of the construction of ruins by eighteenth century landscape architects.[96]

Unless the value of wildness is formally recognised within rewilding and reserve acquisition strategies, the ethical issues discussed here are unlikely to be factored into the decision making process. The assumption that wildness is protected by conserving biodiversity will continue to prevail, at least in those countries where most of the attention of conservationists is directed toward protecting large, wild areas from development. Interest in the protection of wildness independent of its relationship to biodiversity is perhaps more likely in countries, and particularly in urban districts, where the proportion of land under intense management is quite high.[97] As noted by Ned Hettinger and Bill Throop, with greater 'humanization' of the

[96] Paul Zucker, "Ruins: An Aesthetic Hybrid," *Journal of Aesthetics and Art Criticism* 20 (1961): 119-30; Christopher Woodward, *In Ruins*, (London: Vintage, 2002), pp. 126-28.

[97] Aidan Davison and Ben Ridder, "Turbulent Times for Urban Nature in Australia," *Australian Zoologist* 33:306-14.

landscape, wildness will increase in rarity and thereby increase in value.[98] This could be the explanation for the apparent interest in Europe in 'urban wilderness',[99] and the greater propensity for British authors writing on the topic of rewilding to include serious consideration of the value of wildness.[100] In locations such as these, traditional approaches to wilderness management, developed for the large natural expanses found in places like the United States, Canada and Australia, are not always appropriate. These approaches tend to focus on minimum distances from roads, pristine habitats, and the absence of human structures; criteria that are less meaningful in the urban context, where wildness can still be found and appreciated despite the limited opportunity for absolute solitude. To enable such areas to be 'managed' for wildness requires some recognition that management itself is the problem.

X. THE ROLE OF SCIENCE AND VALUES

As noted above in relation to the human-nature dichotomy, there are situations in which noninterventionists will view concern for ecological relationships as being secondary to the principal value of allowing nature to take its course. This carries the risk that noninterventionists will promote courses of action with undesirable side-effects, such as those observed in Yellowstone National Park, that could have been avoided had there been

[98] Ned Hettinger and Bill Throop, "Refocusing Ecocentrism: De-emphasizing Stability and Defending Wildness," *Environmental Ethics* 21 (1999): 13.

[99] Matthias Diemer, Martin Held and Sabine Hofmeister, "Urban Wilderness in Central Europe, *International Journal of Wilderness* 9 (2003): 7-11.

[100] See, for example, Taylor, *Beyond Conservation*, pp. 88-89, 217, 222.; Adams, *Future Nature*, revised edition, pp. 159-66.

greater respect for the value of scientific investigation. This tendency to prioritise subjective values over science generates considerable criticism from interventionists, who often fail to acknowledge the value-laden aspects of their own judgements.[101] The apparent hypocrisy leads to Cole's point that the choice confronting natural area managers is not "between science and philosophy. The choice is between two different sets of values, both of which relate to somewhat conflicting views of what wilderness should be and the appropriate relationship between humans and wilderness."[102] This is a point lost on Stephen Budiansky, who seems entirely unaware of the possibility that minimising human and societal intervention in nature could be valued as an end in itself, apparently believing that only physical changes are worthy of being considered 'desirable ends':

> 'Hands off' ought to be looked upon as merely one possible management tool for achieving a desired end. Its suitability ought to be judged solely according to whether it can achieve that end – whether that goal be protecting a beautiful landscape or an endangered species, maximizing biodiversity, or ensuring a

[101] Dwight Barry and Max Oelschlaeger, "A Science for Survival: Values and Conservation Biology," *Conservation Biology* 10 (1996): 905-911; Paul Roebuck and Paul Phifer, "The Persistence of Positivism in Conservation Biology," *Conservation Biology* 13 (1999): 444-46; R. Bruce Hull, David Richert, Erin Seekamp, David Robertson and Gregory J. Buhyoff, "Understandings of Environmental Quality: Ambiguities and Values Held by Environmental Professionals," *Environmental Management* 31 (2003): 1-13; Tabatha J. Wallington and Susan A. Moore, "Ecology, Values, and Objectivity: Advancing the Debate," *BioScience* 55 (2005): 873-78.

[102] Cole, "Symbolic Values," p. 25.

> sustainable supply of fish or lumber. Instead it has come to be seen as an end in itself, justified after the fact by hand-waving arguments that assert it can also deliver the goods. It rarely can.[103]

Ignorance of ecological realities does not do the noninterventionist cause any favours. However, the same can be said for interventionists. Consider the deep scepticism of Light and Higgs toward noninterventionist approaches. They state that "if swaths of degraded land were left untouched for many years, some things might come back... but there is no assurance that these regenerated ecosystems would be functionally and structurally sound."[104] Mark Sagoff casts considerable doubt on the ability of ecologists to objectively distinguish between an ecosystem that has regenerated naturally, and one that is 'functionally and structurally sound'.[105] As discussed in chapter three in relation to ecosystem services, many conservationists are unwilling to acknowledge that ecosystem function is not necessarily degraded by changes in species composition.

Stephen Jay Gould emphasises the crucial role that science plays in such debates:

> When biologically based claims have such a range of political usages (however dubious, and however unfairly drawn some may

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[103] Budiansky, *Nature's Keepers*, p. 23.

[104] Light and Higgs, "The Politics of Ecological Restoration," pp. 235-36 (footnote).

[105] Sagoff, "Muddle or Muddle Through?" pp. 825-993; Mark Sagoff, "Ecosystem Design in Historical and Philosophical Context," in *Ecological Integrity: Integrating Environment, Conservation, and Health*, ed. David Pimentel, Laura Westra and Reed F. Noss, (Washington, DC: Island Press, 2000), pp. 61-78.

> be), it becomes particularly incumbent upon us to examine the scientific validity of the underlying arguments, if only to acquire weapons to guard against usages that properly inspire our ethical opposition (for if the biological bases are wrong, then we hold a direct weapon; and if they are right, then at least we understand the argument properly, and can accurately drive the wedge that always separates factual claims from ethical beliefs).[106]

Such comments provide a strong case for an honest and self-reflective appraisal of the values underlying conservation strategies, with science employed to provide insights into how nature, as the focus of these values, will change over time, both as a result of natural processes and in response to our own actions.

Many examples are available of scientists who fully acknowledge the significance of values for conservation biology; people like Ehrenfeld and Slobodkin, Soulé and Taylor, Trudgill and Cole. This is emphasised by Taylor who appears to combine scientific rigour with a New Age perspective on connection with the land, including wild men's retreats, vision quests, yogis, witchcraft, and native American teaching.[107] He acknowledges that this impedes the garnering of support from mainstream society, and his approach highlights a particular advantage of the one taken here. By grounding the investigation of conservation strategies in consideration of the motives underlying the value of nature 'for itself',

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[106] Gould, "An Evolutionary Perspective," p. 13.

[107] Taylor, *Beyond Conservation*, pp. 15-31.

concern for wildness can be liberated from the alienating spirituality promoted by some environmental activists.

In a forum on the contradictions inherent in managing wildness, Peter Landres drew attention to the following questions:

> Do the symbolic value of wildness and the ecological value of [biodiversity] have equal importance? Is it even appropriate to define a target for natural conditions in wilderness? Only after answering such questions and making all value judgments and assumptions explicit can we evaluate the relative risks and benefits of taking action in each situation and reach a decision on whether to do so.[108]

The four motives underlying the inherent value of nature greatly facilitate the exploration of such questions, which in turn will generate insights into how the current dominance of biodiversity-oriented management can be modified to ensure that all the values of nature are adequately protected.

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[108] Peter Landres, "Managing the Wild: Should Stewards be Pilots?" *Frontiers in Ecology and the Environment* 2 (2004): 499.

XI. CONCLUSION

It is in the debates between naturalness and wildness, restoration and preservation, intervention and nonintervention, that conflict between a focus on the conservation of biodiversity and the values of nature becomes most apparent. The management imperative associated with the motive of *Scientific Concern* is entirely at odds with the hands-off approach encouraged by *Autonomy*. However, there is considerable convergence between the opposing positions. In the face of development pressure, biodiversity and wildness advocates share a common goal in attempting to protect natural areas from destruction. Both positions are other-regarding without being entirely free of anthropocentrism, are associated with respect for nature as something distinct from humanity while recognising our interdependence, and share the capacity to inspire intense feeling in the community. In relation to the inherent value approach it could be said that the motives of *Scientific Concern* and *Autonomy* exert a significant influence on each position, although they differ in the priority assigned to them. The relatively new phenomenon of 'rewilding' has the potential to unite the interventionist and noninterventionist positions provided that the values associated with wildness are formally recognised alongside those associated with biodiversity. Agreement also requires noninterventionists to ensure that their views are firmly grounded in ecological reality, and that conservation biologists acknowledge the values that underpin their concern for biodiversity.

Chapter Twelve

AN ETHICAL SOLUTION TO THE 'PROBLEM OF BIODIVERSITY'

The environmentalist's dilemma is explaining nature so as to change our way of understanding nature, which of course shapes the way the environmentalist explains nature in the first place. This bears a strong resemblance to Marx's dilemma of explaining social evolution in order to change our way of understanding social change, which of course shaped Marx's own view of social evolution in the first place. Marx saw his central challenge as eliminating capitalism. Environmental reformers may see theirs as eliminating the human exploitation of nature. But both reformers want to change a system that shapes their definitions of and their desire for change in the first place. Environmentalists must try to preserve nature at least partly by applying the methods of a science they believe has been instrumental in damaging nature... Envisioning any alternative to the present system necessarily seems 'utopian' or 'mystical,' in part because that alternative must be formulated in a vocabulary that relies for its meanings on associations drawn from the social or environmental status quo.

Alice Ingerson (1994)[1]

I. INTRODUCTION

At the heart of this dissertation is the concern that dominance of the concept of biodiversity will skew conservation away from values of nature that are inconsistent with the values and management of biodiversity. This

[1] Alice E. Ingerson, "Tracking and Testing the Nature-Culture Dichotomy," in *Historical Ecology: Cultural Knowledge and Changing Landscapes*, ed. Carole L. Crumley (Santa Fe: School of American Research Press, 1994), pp. 64-65.

chapter considers whether or not this is, in fact, a 'problem', the role that environmental ethics has to play in addressing this problem, and the possible management actions that could be taken.

II. IS THERE A PROBLEM?

After examining the two main areas of conflict generated by the dominance of the concept of biodiversity within environmental legislation it might seem as though the 'problem' of biodiversity has been somewhat overstated. In the case of animal welfare, environmental legislation has generally been foreshadowed by a legal framework for ensuring that conservation activities pay some heed to the suffering of sentient animals. In the case of ecological restoration and 'wildness', it appears that very few actual disputes have been generated by community concern that the former is detrimental to the latter. The conflicts that do arise tend to be intellectual rather than physical, and limited to the pages of academic journals. This begs the question: "Is the problem of biodiversity a real problem?"

The concept of biodiversity has an unusual power within the modern bureaucratic and political system. Biodiversity has emerged as a legitimate value where so many other aspects of nature (and culture) are dismissed within decision making structures as being of mere subjective concern. Consequently, the conservation of biodiversity has attained a momentum that has benefited many other aspects of nature, 'wildness' included. The creation, through land acquisition, of protected area networks that protect a minimum area of each major ecosystem, has contributed immensely to the total area of protected wild land. Landscapes that might have once been

excluded from protection on the grounds of their aesthetic merit are now targeted for inclusion to ensure that such reserve networks are 'representative'.[2] These areas might well be managed solely for the benefit of threatened species and ecosystems, with very little thought given to the effect that such interventions have on 'wildness', but few preservationists would view this as being of dramatic concern. In general, such management is guided by respect for nature, rather than by the achievement of economic objectives. So, just what is 'the problem' of biodiversity?

As observed by Kate Rawles:

> biological diversity is never discussed without a verb. Unlike nature, that just is, biological diversity is always being preserved, conserved, maintained, or even enhanced. Hence the concept is implicitly managerial, and biased against a more hands-off approach to conservation which some favor, or at least want to keep open as an option.[3]

Confident belief in the righteousness of the biodiversity conservation cause, without a corresponding awareness of the inherent conflict between wildness and the management imperative, marginalises the value of wildness. It implies that wildness has no value, or if it does, that this value

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[2] Eduardo Crespo de Nogueira and Consuelo Martinez Flores, "Aesthetic Values and Protected Areas: A Story of Symbol Preservation," *The George Wright Forum* 21 (2004): 46.

[3] Kate Rawles, "Biological Diversity and Conservation Policy," in *Philosophy and Biodiversity*, ed. Markku Oksanen and Juhani Pietarinen (Cambridge: Cambridge University Press, 2004), p. 209.

is merely superficial. It suggests that provided we protect from harm things known to be wild, then wildness itself will be protected, which is akin to suggesting that the vitality of a carnivorous animal can be maintained in a zoo.

Of course, conservation biologists argue strongly that wild nature be protected in the wild rather than in zoos. But with their management rhetoric, and apparent lack of awareness that much of the value of nature relates to its autonomy from human society, many conservationists convey the impression that the full implications of the value of wildness mean nothing for them. For at its heart, respect for naturalness, for wildness, for the 'untrammeled' quality of nature, conveys an attitude to modern society; a dissatisfaction with its abstractions and with the callous disregard of management systems for humane reality. It could be argued that it is this dissatisfaction with society that unites environmentalists, rather than a largely self-interested concern for 'the environment'. It is likely that most conservationists sympathise with these views, and have simply not found an adequate way of expressing them, or have not realised the implications that flow from the omission of the value of nature's autonomy from the biodiversity discourse. If this is an accurate reflection of the situation, the way forward is not necessarily radical. It does not require the overthrow of Western governments, or the moral ascendancy of 'hands-off' approaches to managing natural areas. What is required is greater awareness of why 'leaving nature alone' is such a captivating alternative.

III. ENVIRONMENTAL ETHICS

As noted in chapter one, the objective of this thesis has been descriptive rather than revisionary; to increase our understanding of why biodiversity and nature are valued rather than to argue for new ways of valuing. The discussion has culminated in the identification of four motives underlying the inherent values associated with nature. However, description and revision are not necessarily separate activities. Although the four motives are pre-existing and their influence on environmental values easily discernible, to explain values of nature in such a way might itself give rise to a shift in values. As suggested by Simon Blackburn (in a slightly different context), "when reinterpretations of ourselves are taken seriously, they not only have the power to change our view of others for the worse, but even more power to change our own self-definition, so that we start to live up to [the reinterpretations]."[4] By this path, the inherent value approach might be transformed into an alternative ethical system to that provided by the concept of biodiversity. Rather than assessing all human actions relative to the degree to which they benefit or harm native biodiversity, we can formally incorporate naturalness and wildness into consideration of appropriate human-nature relationships.

The new ethical approaches to the value of nature and nonhuman life proposed during the 1970s and 80s – what might now be described as the golden age of ecophilosophy – have not weathered well the sustained

[4] Simon Blackburn, *Ruling Passions: A Theory of Practical Reasoning*, (Oxford: Clarendon Press, 1998), p. 153.

criticism of subsequent years.[5] Robert Kirkman suggests that part of the problem is that environmental philosophers have lost touch with the real world:

> the issue for many speculative environmentalists is not, ultimately, whether the ecological view of the world is true or whether the set of normative claims it fosters is valid, but only whether the worldview and its attendant values are adequate to the task of supporting environmentalism as a political movement.[6]

One of the consequences is that arguments arising from such sources "are likely to convince only those who already agree with the conclusions."[7] Environmental pragmatists emphasise similar issues, although Kirkman is sceptical of their efforts also, suggesting that philosophers such as Eric Katz and Andrew Light remain unwilling to question the core values of environmentalism.[8]

The inherent value approach taken here appears to satisfy some of the concerns of Kirkman and environmental pragmatists such as Anthony Weston. Rather than ascribe rights or intrinsic value to particular aspects of

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[5] See, for example, Andrew Light and Eric Katz (eds.), *Environmental Pragmatism*, (London: Routledge, 1996); Eric Katz, Andrew Light and David Rothenberg (eds.), *Beneath the Surface: Critical Essays in the Philosophy of Deep Ecology*, (Cambridge: The MIT Press, 2000); Wayne Ouderkirk and Jim Hill (eds.), *Land, Value, Community: Callicott and Environmental Philosophy*, (Albany: State University of New York Press, 2002).

[6] Robert Kirkman, *Skeptical Environmentalism: The Limits of Philosophy and Science*, (Bloomington: Indiana University Press, 2002), p. 142.

[7] *Ibid.*, p. 166.

[8] *Ibid.*, pp. 164-65.

nature, or work backwards from certain ideological positions, this approach examines the underlying motivations for why people might come to value nature for itself. The four motives that have been identified correspond to significant modes of valuing nature:

- Concern for animal welfare, for which the experience of connection with nonhuman life (*Connection*) is the dominant motive.
- Concern for biodiversity, which is primarily motivated by intellectual interest in nature (*Scientific Concern*).
- Respect for nature motivated by its embodiment of some larger context within which human lives are embedded (*Larger Context*).
- Respect for wildness and naturalness, stimulated by dissatisfaction with the abstractions of modern society and a subsequent desire for autonomy from the sources of such discontent (*Autonomy*).

The pluralism entailed in this approach has the potential to encourage a greater degree of awareness and respect for the diversity of values that are ascribed to, and found in nature. For this reason it stands opposed to the monistic dominance of the concept of biodiversity, and provides direction on ameliorating this dominance through recognition of other values. Significantly, this involves a shift away from the intrinsic value approaches that have occupied so much of the energy of environmental philosophers. The category of inherent value reflects the capacity for people to value aspects of nature 'for themselves', and in the absence of an explanation for why they might feel this way it is apparent that the value might *appear* to

be independent of human valuing. Hence it provides an anthropocentric explanation for the existence of nonanthropocentric values.

Clarification of the motives underlying the inherent value of certain aspects of nature will assist those attempting to protect nature from human exploitation and destruction. In such situations, non-instrumental values are frequently assigned low priority because the reasons why such aspects of nature might be valued are poorly defined. The four motives that comprise the axiology of inherent value serve to define these reasons, and will hopefully enable a more persuasive case to be articulated for the protection of things that hold no material benefit for society. Being grounded in people's intuitions about the value of nature, arguments derived from the four motives will have a deep emotional appeal. Yeuk-Sze Lo considers the role of environmental philosophers in developing these arguments:

> the most that non-anthropocentric environmental philosophers can do is to be informed and realistic about human evaluative psychology, and try to excite favourable moral sentiments from us towards the objects of environmental concern by catching our imagination and sympathetic understanding with their philosophical arguments, and hope that those sentiments will endure our reflections... [But] this can happen only if there are already some original materials of our moral psychology that underlie our dispositions (if any) to appreciate, respect, and care for those things, and give us some notion of their moral significance. Whether, and to what extent, there are any such original ingredients of human

psychology, however, are more properly seen as empirical questions not single-handedly answerable by philosophers *a priori*.[9]

The inherent value approach helps to identify some of the 'original materials' to which Lo refers, although contrary to her final suggestion, philosophical approaches may actually have a distinct advantage. Although empirical confirmation of the significance of the four motives would enhance their persuasiveness, it remains that the subconscious quality of such motives renders them difficult to articulate and distinguish from one another, and therefore difficult to elicit from survey participants.[10]

The inherent value approach also provides a useful method for examining environmental ethics itself. It is apparent, for example, that while deep ecology can encompass respect for values associated with all four of the motives, there is little acknowledgement of the need for guidance on resolving conflicts between values, such as between the intrinsic value of biological diversity and the desire that nature be left wild.[11] The motive of *Autonomy* is particularly useful for the insight it provides into the value of naturalness and the basis of support for preservationism. In the motive of *Autonomy* we can also find a straightforward explanation for why the idea of the social or cultural

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[9] Yeuk-Sze Lo, "Making and Finding Values in Nature: From a Humean Point of View," *Inquiry* 49 (2006): 142.

[10] Theresa Satterfield, "In Search of Value Literacy: Suggestions for the Elicitation of Environmental Values," *Environmental Values* 10 (2001): 331-59.

[11] Bill Devall and George Sessions, *Deep Ecology: Living as if Nature Mattered*, (Layton: Gibbs Smith, 1985), p. 70.

construction of nature raises such ire among many environmentalists.[12] That our understanding of nature might be dependent on human perceptions and societal trends, no matter how valid this observation might be, undermines the value of nature as something autonomous from society. It is akin to discovering that a person respected for their honesty and frugality is actually involved in corrupt dealings with criminals and living an opulent lifestyle. *Autonomy* also suggests a non-racist explanation for the inclusion of less-developed societies within the same category as the nonhuman, being that they, along with nature, provide a symbolic counterpoint to contemporary western society.[13]

The influence of *Autonomy* can be seen in the attempts by Elliot and Katz to employ complex philosophical arguments in order to safeguard the value of the autonomy of nature, such as by comparing natural ecosystems to rare works of art. Yet, the art analogy carries with it the spurious implication that people value the autonomy of nature for the same reasons that they might value a renaissance painting. That such arguments are unconvincing is not surprising given that they do not ground the value of naturalness in some tangible human response to nature, relying instead on the argument that nature's value is independent of human valuation. Greater understanding of the motive of *Autonomy* alleviates the need for

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[12] See, for example, Michael E. Soulé, "The Social Siege of Nature," in *Reinventing Nature? Responses to Postmodern Deconstruction*, ed. Michael E. Soulé and Gary Lease (Washington, DC: Island Press, 1995), pp. 137-170; Eileen Crist, "Against the Social Construction of Nature and Wilderness," *Environmental Ethics* 26 (2004): 5-24.

[13] This issue was discussed in chapter six.

such devices, and provides a powerful tool with which to probe the noninterventionist sensibility, as demonstrated in the previous chapter.

Simon Hailwood, among others, has observed a bias within environmental ethics towards approaches grounded in human connections and interrelationships with nature:

> much eco-philosophical and eco-political theorizing has tended to build on markedly holistic pictures of humanity in nature, stressing continuity and community membership, strongly suggesting that we should identify with nature as deeply as possible and radically downplay any human-non-human distinction.[14]

Autonomy provides some balance to this bias, yet because of its integration within a broader axiology, it does not simply replace one unbalanced perspective with another. *Connection*, *Scientific Concern*, and *Larger Context* remain equally valid sources of value, along with the instrumental and more overtly cultural values that permeate our perception of the world. A significant aspect of the balance provided by *Autonomy* is that it explains the extension of human concern beyond other sentient beings, and terrestrial life in general, to all nonhuman life, including life on other planets, and non-living aspects of nature. In this regard, *Autonomy* responds to Eugene Hargrove's concern that "unless we want nonliving natural objects like caves to be entirely dependent on the trickle-down

[14] Simon Hailwood, *How To Be a Green Liberal: Nature, Value and Liberal Philosophy*, (Chesham: Acumen, 2004), p. 12.

effect of nonanthropocentric arguments for the protection of living organisms, we still need anthropocentric justifications..."[15]

IV. RECOMMENDATIONS FOR MANAGEMENT

It should by now be apparent that the dominance of the concept of biodiversity within environmental management systems does not truly reflect the full range of motivations people have for valuing nature, but is instead indicative of the influence within western societies of instrumental managerialism and the motive of *Scientific Concern*. The motive of *Connection* also has a strong presence within management systems through animal welfare legislation and animal ethics procedures. It is *Autonomy*, the noninterventionist position, and the value of wildness, that are least represented within environmental management systems.[16] Prioritising the value of biodiversity, and, to a lesser extent, animal welfare concerns, demands an interventionist approach, either in actively managing habitat, or gathering information about the biology and condition of nonhuman life. Without concurrent recognition of the values associated with nonintervention, and some guidance on how to resolve conflicts between them, wildness is marginalised as a value worthy of consideration. Although parallel management systems exist for protecting such qualities as 'wilderness character', these tend to apply only in large, relatively

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[15] Eugene C. Hargrove, *Foundations of Environmental Ethics*, (Englewood Cliffs: Prentice Hall, 1989), p. 167.

[16] As noted in chapter ten, the values inspired by *Larger Context* tend to coincide with those associated with the other motives.

undeveloped natural areas – there is little recognition that small pockets of nature might also be valued for their wildness.

Formal acknowledgement of the value of wildness is problematic insofar as the underlying motive of *Autonomy* is explicitly critical of many aspects of contemporary western society. Scepticism toward the benefits of corporate influence, bureaucratic centralisation, and a focus on worker productivity rather than happiness, are closely associated with the dissatisfaction described by *Autonomy*, and although such doubts are common among the populace, enshrining them within policy is politically difficult. Compared with the instrumental benefits that can be claimed on behalf of scientifically managed biodiversity sanctuaries, noninterventionist approaches to nature have little to offer decision makers focused on tangible economic outcomes. Nonetheless, the success of the environment movement is testament to the capacity of democratic societies to take non-instrumental values seriously. It is not beyond the bounds of possibility that mainstream western society might come to recognise the cultural benefit of allowing certain areas to remain unmanaged for the sole reason that they stand in contradistinction to the abstractions and excessive deliberation that characterise this information age.

Acknowledging the value of wildness is associated with its own management issues, not least being to maintain the appearance of wildness in the face of large numbers of visitors.[17] Practical difficulties such as these

[17] See Peter Landres, *et al.*, *Monitoring Selected Conditions Related to Wilderness Character: A National Framework*, General Technical Report RMRS-GTR-151, (Fort Collins: United States Forest Service Rocky Mountains Research Station, 2005).

undermine the values associated with *Autonomy* and ensure that there will always be a demand for wild places that are sufficiently dangerous or inaccessible that the need for management of visitor impacts is minimal. Ideally the casual visitor can achieve some limited experience of the sublime quality of such places through activities on the periphery, travel along marked trails, and from the information provided by visitors' centers. By incorporating the principles of *Autonomy* within management schemes and planning codes it should be possible for development and maintenance to be carried out in a manner that is consistent with the values that draw visitors to such places.

The tendency for laws that protect rare species to be used as surrogate mechanisms for the protection of wild areas reflects the under-representation of *Autonomy* within environmental legislation.[18] The resolution of this issue requires legal recognition of the value of wildness in the same way that there is recognition of the value of historic cultural heritage. Development regulations that proceed from this basis will be in a better position to promote activities that are consistent with wildness than regulations whose focus is surrogate criteria for wildness. Movement in this direction is apparent at the international level with the consideration of 'intangible values' by the 2003 General Assembly of the International Council on Monuments and Sites (ICOMOS)[19] and recent attention from the World Conservation Union (IUCN) on 'non-material' and 'cultural and

[18] See, for example, James M. Glover, "Soul of the Wilderness: Can We Stop Trying to Control Nature?" *International Journal of Wilderness* 6 (2000): 4-8.

[19] See the ICOMOS website (http://www.international.icomos.org/victoriafalls2003).

spiritual values' of protected areas.[20] In a book commissioned on this issue by the IUCN, Allen Putney makes the point that:

> There is little doubt that the preservation of biodiversity is one of the most important challenges of our time... Yet parks, and other categories of protected areas, are highly valued by important segments of society, even when they are unfamiliar with biodiversity values.[21]

The interest in non-material and intangible values has tended to focus on the spiritual traditions of indigenous people, and more recently established 'cultural' connections between contemporary communities and particular natural landscapes and sites.[22] Yet, in such discussions, perhaps the most deserving of intangible values (from a contemporary western perspective), and one that is rarely mentioned in this discourse, is 'wildness'. However, as suggested by the number of people contributing to the defense of wildness within the academic literature, the growing interest in rewilding, and the sort of policies that have been approved in recent years in places like Scotland,[23] it seems likely that awareness of the value of wildness is set to escalate.

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[20] See the website for the IUCN Taskforce on Cultural and Spiritual Values (http://www.iucn.org/themes/wcpa/theme/values/values.html).

[21] Allen D. Putney, "Introduction: Perspectives on the Values of Protected Areas," in *The Full Value of Parks: From Economics to the Intangible*, ed. David Harmon and Allen D. Putney (Lanham: Rowman & Littlefield, 2003), p. 3.

[22] See, for example, Anthony J. English and Ellen Lee, "Managing the Intangible," *The George Wright Forum* 21 (2004): 23-33.

[23] Policies on the significance of wildness were introduced by the Scottish Executive in 1998, and by Scottish Natural Heritage and the National Trust for

V. CONCLUSIONS

It is clear that environmental ethics does have a role to play in balancing the current dominance of the concept of biodiversity within environmental management systems. This role primarily relates to the clarification of values – particularly those associated with wildness – and the provision of guidance for resolving conflicts between different values. The inherent value approach taken here can contribute productively to this process as it provides a clear articulation of the motives underlying the value of both biodiversity and wildness. However, greater balance will only be achieved by incorporating the value of wildness and nonintervention in nature within environmental legislation, development planning regulations and management principles. This will be politically difficult, not least because the motivation underlying the value of wildness is inconsistent with the economic, managerial focus of the dominant political and government structures within contemporary western society. However, there is evidence of change occurring at the international level.

Scotland, in 2002. See Scottish Executive, *National Planning Policy Guideline 14: Natural Heritage* (NPPG14). Available from the website of the Scottish Executive (http://www.scotland.gov.uk). Scottish Natural Heritage, *Wildness in Scotland's Countryside*, (Policy Statement No. 02/03, 2002). Available from the website of Scottish Natural Heritage (http://www.snh.org.uk). National Trust for Scotland, *Wild Land Policy*, 2002. Available from the National Trust for Scotland website (http://www.nts.org.uk).

CHAPTER THIRTEEN

Conclusion

The objective of this dissertation, outlined in chapter one, was to examine the 'problem' of the dominance of the concept of biodiversity within environmental management systems. This problem arises because the values associated with biodiversity form only a small subset of the many values broadly associated with nature. Consequently, management oriented toward achieving biodiversity outcomes might be to the detriment of these other values.

In order to direct this inquiry the following question was posed:

"Is management undertaken to conserve biodiversity compatible with protecting the values associated with nature?"

Guided by this question, and in order to satisfy the larger objective, the dissertation was divided into five parts and thirteen chapters. In Part A, which largely consisted of background material, it was found that a contributing factor to this problem is that 'biodiversity' is often erroneously assumed to be equivalent to 'nature', making emphasis of the distinctions between their respective values a potentially confusing exercise.

In Part B, it appeared that the most powerful instrumental justifications for the conservation of biodiversity, being that it is essential for the maintenance of ecosystem services, and that it has potential commercial

value, were somewhat 'wobbly'. The first claim is only true for some ecosystem services, while the second is only persuasive as a supporting argument; when compared with alternative methods for making money the conservation of biodiversity does not appear to be a particularly sound investment. All instrumental arguments carry this risk, being that more efficient means for achieving the same end might be identified that do not require the protection of nature. This risk is of particular significance for environmentalists as the non-instrumental values of biodiversity appear to exert greater influence on the motivations of those who campaign for the conservation of biodiversity than do instrumental values. However, further investigation of such non-instrumental values suggested that claims for the intrinsic value of biodiversity were difficult to sustain and involved assumptions and corollaries unlikely to appeal to those who make such claims. The most likely sources for the non-instrumental value of biodiversity are its intellectual interest value, and the intrinsic value of nonhuman life. The latter is then mistakenly believed to be equivalent to the intrinsic value of biodiversity.

The values more broadly associated with nature were considered in Part C. One particularly valued aspect of nature is its naturalness, although conflicting interpretations of this quality were identified. Defining naturalness with respect to historic ecological benchmarks was found to be associated with the desire to conserve biodiversity. This interpretation potentially conflicts with the alternative, which views naturalness as related to processes that are free of rationally-planned human intervention. Various explanations for the values associated with natural processes, which also relate to the value of wildness, and the autonomy of nature, were reviewed

and found to be unsatisfactory on the whole. A more systematic approach to articulating the values of nature was suggested, involving consideration of the motives apparent in contemporary western society that might underpin the sensation that nature is valued 'for itself'. Such values are termed 'inherent' values. An axiology of inherent value was then proposed, consisting of four 'motives', as follows:

MOTIVE ONE	**The experience of connection with**
(*Connection*)	**nonhuman life.**
MOTIVE TWO	**Intellectual interest in nature.**
(*Scientific Concern*)	
MOTIVE THREE	**Respect for the larger context.**
(*Larger Context*)	
MOTIVE FOUR	**Dissatisfaction with the abstractions of**
(*Autonomy*)	**modern society.**

These motives, in combination with the instrumental and personal values associated with nature, give rise to the sense that nature and nonhuman life, in part or in total, are valued for themselves. In the absence of any explanation, such values can be perceived as independent of the process of valuing, and therefore intrinsic to nature. The explanation provided by the inherent value approach reflects the influence of culture, human genetic predispositions, and the physical qualities of nature and nonhuman life.

In Part D the potential for both conflict and convergence between the conservation of biodiversity and other values associated with nature was examined with reference to the four motives, although *Larger Context* was essentially removed from the discussion as it gives rise to values that are

either indistinguishable from those associated with the other motives, or are overly dependent on religious teachings. In keeping with the findings of Part B, the conservation of biodiversity was found to be primarily associated with *Scientific Concern*. The motives of *Connection* and *Autonomy* were also linked to actual trends within environmental thought, with the former inspiring concern for animal welfare, and the latter underpinning the value of naturalness, wildness, and a 'hands-off' approach to managing nature. Conflict between *Scientific Concern* and *Connection* is echoed in the debates between conservationists and animal welfare groups over the harming of introduced animals in order to benefit native species. Convergence between the two positions is apparent, for example, in the less-sympathetic attitude of welfarists toward the suffering of wild animals in natural circumstances, and in the sympathy experienced by most people when actually confronted with this situation. Such convergence reflects the influence of subdominant motives on the otherwise opposing positions. Those primarily motivated by *Scientific Concern*, for example, may also be motivated by *Connection* and *Autonomy*, although in conflicting situations *Scientific Concern* will trump the others.

Conflict between *Scientific Concern* and *Autonomy* is found in the debates between 'naturalness' and 'wildness', restorationists and preservationists, intervention and nonintervention. The tension between these two motives gives rise to the situation where the current dominance of the concept of biodiversity is most likely to result in an actual loss of value. While concern for animal welfare has a strong presence within legal statutes, this is not so for the value of wildness. Nonetheless, there is also

significant convergence between the interventionist and noninterventionist positions. Both are other-regarding without being entirely free of anthropocentrism, are associated with respect for nature as something distinct from humanity while recognising our interdependence, and have the capacity to inspire intense feeling in the community. The increasingly prevalent conservation strategy of 'rewilding' represents a significant point of contact between these two positions, although, despite the terminology used, in most countries such strategies remain focused on the biodiversity conservation imperative, with the value of wildness secondary.

It is apparent that the axiology of inherent value, although developed as a means for explaining the values of nature, might itself also constitute an environmental ethic. As an ethical approach to nature, the axiology is pluralistic, grounded in actual human responses to nature, and anthropocentric while remaining focused on the non-instrumental. In this capacity it functions as an alternative to that provided by the science and values associated with the concept of biodiversity. It has the potential to provide guidance for natural area management, particularly in relation to safeguarding the values associated with *Autonomy* and wildness, which are currently under-represented within environmental management systems compared with the values associated with the conservation of biodiversity.

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